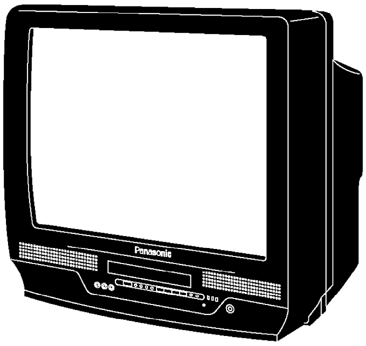
ORDER NO. MKE0003103C1
B6

Service Manual

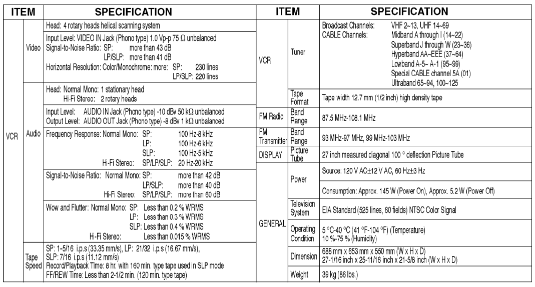
Combination VCR

Omnivision VHS

PV-C2780 / PV-C2780-K



SPECIFICATIONS



ITEM		SPECIFICATION
VCR	Video	Head: 4 rotary heads helical scanning system
		Input Level: VIDEO IN Jack (Phono type) 1.0 Vp-p 75 Ω unbalanced Signal-to-Noise Ratio: SP: more than 43 dB LP/SLP: more than 41 dB Horizontal Resolution: Color/Monochrome: more: SP: 230 lines LP/SLP: 220 lines
	Audio	Head: Normal Mono: 1 stationary head Hi-Fi Stereo: 2 rotary heads
		Input Level: AUDIO IN Jack (Phono type) -10 dBv 50 kΩ unbalanced Output Level: AUDIO OUT Jack (Phono type) -8 dBv 1 kΩ unbalanced
		Frequency Response: Normal Mono: SP: 100 Hz-8 kHz LP: 100 Hz-6 kHz SLP: 100 Hz-5 kHz Hi-Fi Stereo: SP/LP/SLP: 20 Hz-20 kHz
		Signal-to-Noise Ratio: Normal Mono: SP: more than 42 dB LP/SLP: more than 40 dB Hi-Fi Stereo: SP/LP/SLP: more than 60 dB
		Wow and Flutter: Normal Mono: SP: Less than 0.2 % WRMS LP: Less than 0.3 % WRMS SLP: Less than 0.4 % WRMS Hi-Fi Stereo: Less than 0.015 % WRMS
	Tape Speed	SP: 1-5/16 i.p.s (33.35 mm/s), LP: 21/32 i.p.s (16.67 mm/s), SLP: 7/16 i.p.s (11.12 mm/s) Record/Playback Time: 8 hr. with 160 min. type tape used in SLP mode FF/REW Time: Less than 2-1/2 min. (120 min. type tape)

ITEM		SPECIFICATION
VCR	Tuner	Broadcast Channels: VHF 2~13, UHF 14~69 CABLE Channels: Midband A through I (14~22) Superband J through W (23~36) Hyperband AA~EEE (37~64) Lowband A-5~ A-1 (95~99) Special CABLE channel 5A (01) Ultraband 65~94, 100~125
	Tape Format	Tape width 12.7 mm (1/2 inch) high density tape
FM Radio	Band Range	87.5 MHz-108.1 MHz
FM Transmitter	Band Range	93 MHz-97 MHz, 99 MHz-103 MHz
DISPLAY	Picture Tube	27 inch measured diagonal 100 ° deflection Picture Tube
GENERAL	Power	Source: 120 V AC±12 V AC, 60 Hz±3 Hz
		Consumption: Approx. 145 W (Power On), Approx. 5.2 W (Power Off)
	Television System	EIA Standard (525 lines, 60 fields) NTSC Color Signal
	Operating Condition	5 °C-40 °C (41 °F-104 °F) (Temperature) 10 %-75 % (Humidity)
	Dimension	688 mm x 653 mm x 550 mm (W x H x D) 27-1/16 inch x 25-11/16 inch x 21-5/8 inch (W x H x D)
	Weight	39 kg (86 lbs.)

Weight and dimensions shown are approximate.
Designs and specifications are subject to change without notice.

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⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Panasonic®

1. SAFETY PRECAUTIONS

GENERAL GUIDELINES

1. **IMPORTANT SAFETY NOTICE**
   There are special components used in this equipment which are important for safety. These parts are marked by⚠ in the Schematic Diagrams, Circuit BoardLayout, Exploded Views and Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent X-RADIATION, shock, fire, or other hazards. Do not modify the original design withoutpermission of manufacturer.
2. **An Isolation Transformer should always be used during the servicing of Combination VCR whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects thetechnician from accidents resulting in personal injury from electrical shocks. It will also protect Combination VCR from being damaged by accidental shorting that may occur during servicing.**
3. **When servicing, observe the original lead dress, especially the lead dress in the high voltage circuits. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.**
4. **After servicing, see to it that all the protective devices such as insulation barriers, insulation papers, shield, and isolation R-C combinations are properly installed.**
5. **Before turning the receiver on, measure the resistance between B+ line and chassis ground. Connect (-) side of an ohmmeter to the B+ lines, and (+) side to chassis ground. Each lineshould have more resistance than specified, as follows :**

B+ Line
Minimum Resistance

125 V
1 kΩ (Cold chassis ground)

27 V
180 Ω (Cold chassis ground)

17 V

110 Ω (Cold chassis ground)

6. **When the TV set is not used for a long period of time, unplug the power cord from the AC outlet.**
7. **Potentials, as high as 32.0 kV are present when this TV set is in operation. Operation of the TV set without the rear cover involves the danger of a shock hazard from the TV set power supply. Servicing shouldnot be attempted by anyone who is not thoroughly familiar with the precautions necessary when working on high voltage equipment. Always discharge the anode of the picture tube to the CRT ground of receiver before handling the tube.**
8. **After servicing make the following leakage current checks to prevent the customer from being exposed to shock hazards.**

LEAKAGE CURRENT COLD CHECK

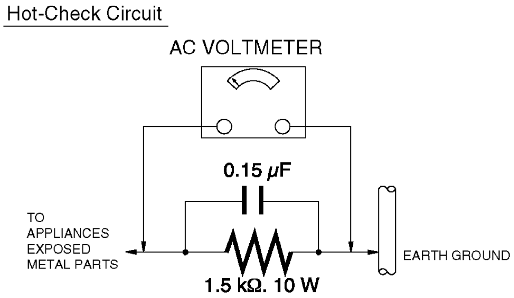
1. **Unplug the AC cord and connect a jumper between the two prongs on the plug.**
2. **For physically operated power switches, turn power on. Otherwise skip step 2.**
3. **Measure the resistance value, with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the receiver, such as screwheads, connectors, etc. When the exposed metallic part hasa return path to the chassis, the reading should be between 1 MΩ and 12 MΩ. When the exposed metal does not have a return path to the chassis, the reading must be infinity.**

LEAKAGE CURRENT HOT CHECK

1. **Plug the AC cord directly into the AC outlet.
   Do not use a isolation transformer for this check.**
2. **Connect a 1.5 kΩ, 10 W resistor, in parallel with a 0.15 μF capacitor, between each exposed metallic part on the set and a good earth ground , as shown in Figure 1.**
3. **Use an AC voltmeter, with 1 kΩ/V or more sensitivity, to measure the potential across the resistor.**
4. **Check each exposed metallic part, and measure the voltage at each point.**

5. **Reverse the AC plug in the AC outlet and repeat each of the above measurements.**
6. **The potential at any point should not exceed 0.75 V RMS.**
   A leakage current tester (Simpson Model 229 equivalent) may be used to make the hot checks. Leakage current must not exceed 1/2 mA. In case a measurement is outside of the limits specified, there is a possibility of shock hazard,and the receiver should be repaired and rechecked before it is returned to the customer.

Figure 1



2. X-RADIATION

WARNING :

1. **The potential source of X-Radiation in TV sets is the High Voltage section and the picture tube.**
2. **When using a picture tube test fixture for service, ensure that the fixture is capable of handling 32.0 kV without causing X-Radiation.**

NOTE :

It is important to use an accurate periodically calibrated high voltage meter.

1. **Reduce the brightness to minimum.**
2. **Set the SERVICE switch to SERVICE .**
3. **Measure the High Voltage. The meter reading should indicate 30.0 kV±2.5 kV.**
   If the meter indication is out of tolerance, immediate service and correction is required to prevent the possibility of premature component failure.
4. **To prevent an X-Radiation possibly, it is essential to use the specified picture tube.**

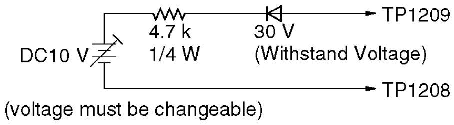
HORIZONTAL OSCILLATOR DISABLE CIRCUIT TEST SERVICE WARNING :

The test must be made as a final check before set is returned to the customer.

CONFIRMATION OF X-RAY MOVEMENT

1. **Turn off TV set.**
2. **Connect the circuit below between TP1209 and TP1208.**

Figure 2



3. **Turn on DC Power, and then turn on the set. Confirm that the picture is on the screen properly.**
4. **Confirm that the picture goes out of horizontal sync while getting down the voltage to DC Power.**
5. **If this does not occur even when getting down the voltage of DC Power to 0 V, it means that X-ray protect circuit is not operating. Further confirmation and repair is required.**

REPAIR PROCEDURES OF HORIZONTAL OSCILLATOR DISABLE CIRCUIT

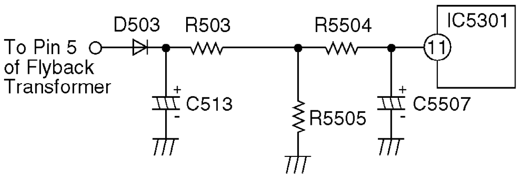
1. **Connect a DC voltmeter between capacitor C513 (+) on the Main circuit board and chassis ground.**
2. **If approximately+21.5 V is not present at that point when 120 V AC is applied, find the cause. Check R503, R5505, C5507, C513 and D503.**
3. **Carefully check above specified parts and related circuits and parts. When the circuit is repaired, try the horizontal oscillator disable circuit test again.**

CIRCUIT EXPLANATION

HORIZONTAL OSCILLATOR DISABLE CIRCUIT

The positive DC voltage, supplied from the D503 cathode for monitoring high voltage, is applied to the IC5301 Pin11 through R503 and R5504. Under normal conditions, the voltage at IC5301 Pin 11 is less than approx 6 V. If the highvoltage at Flyback Tr Pin 5 exceeds the specified voltage, the positive DC voltage which is supplied from the D503 cathode also increases. The increased voltage is applied to IC5301 Pin11 through R503 and R5504. Due to the increased voltage at IC5301Pin11, the horizontal oscillator frequency increases, the picture goes out of horizontal sync, the beam current decreases and the picture becomes dark in order to keep X-radiation under specification.

Figure 3



3. PREVENTION OF ELECTROSTATIC DISCHARGE (ESD) TO ELECTROSTATICALLY SENSITIVE (ES) DEVICES

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and somefield-effect transistors are semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by electrostatic discharge (ESD).

1. **Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any ESD on your body touching a known earth ground. Alternatively, obtain and weara commercially available discharging ESD wrist strap, which should be removed for potential shock reasons prior to applying power to the unit under test.**
2. **After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.**
3. **Use only a grounded-tip soldering iron to solder or unsolder ES devices.**
4. **Use only an antistatic solder removal device. Some solder removal devices not classified as "antistatic (ESD protected)" can generate electrical charge sufficient to damage ES devices.**
5. **Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.**
6. **Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together byconductive foam, aluminum foil or comparable conductive material).**
7. **Immediately before removing the protective material from the**

leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

CAUTION:

Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor cangenerate static electricity (ESD) sufficient to damage an ES device).

"NOTE to CATV system installer :
This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connectedto the grounding system of the building, as close to the point of cable entry as practical."

4. OPERATION GUIDE

5. SERVICE NOTES (PLEASE READ)

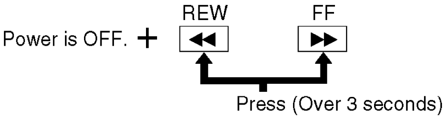
5.1. SERVICE NOTES

5.1.1. SIMPLIFIED FAULT FINDING DATA

Simplified Self-Diagnostic System facilitates finding the cause of the fault. A 4 digit for fault code and communication for I2C bus code will be displayed on TV screen.
The Simplified Fault finding data is stored in the Memory IC (IC6004). This data is cleared after it is displayed, and then the POWER button is pressed back on.

1. With power turned off, press FF and REW buttons on unit together for over 3 seconds.

Fig. 1-1



2. TV power goes on and the unit goes into service mode.
   4 digit for fault code and communication for I2C bus code will be displayed.

Fig. 1-2

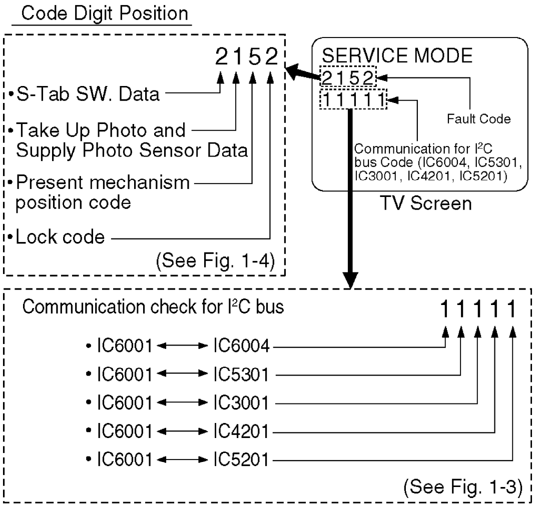

Code Digit Position
2152
•S-Tab SW. Data
•Take Up Photo and Supply Photo Sensor Data
•Present mechanism position code
•Lock code
(See Fig. 1-4)
SERVICE MODE
2152
11111
Fault Code
Communication for I²C bus Code (IC6004, IC5301, IC3001, IC4201, IC5201)
TV Screen
Communication check for I²C bus
11111
• IC6001 ↔ IC6004
• IC6001 ↔ IC5301
• IC6001 ↔ IC3001
• IC6001 ↔ IC4201
• IC6001 ↔ IC5201
(See Fig. 1-3)

Fig. 1-3

(Communication check for I²C bus)

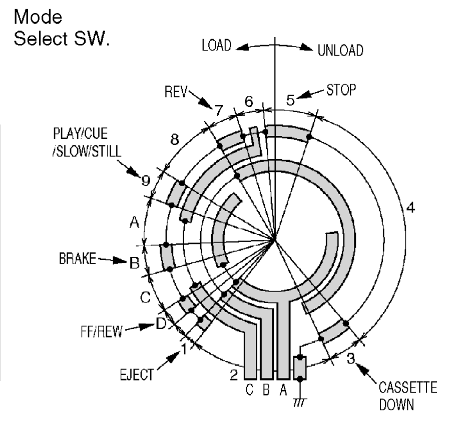
Explanation of Codes	Code No.			
Communication check for I²C bus (IC6001↔IC6004) ----- **NG** **OK**	0 1			
Communication check for I²C bus (IC6001↔IC5301) ----- **NG** **OK**		0 1		
Communication check for I²C bus (IC6001↔IC3001) ----- **NG** **OK**			0 1	
Communication check for I²C bus (IC6001↔IC4201) ----- **NG** **OK**				0 1
Communication check for I²C bus (IC6001↔IC5201) ----- **NG** **OK**				0 1

Fig. 1-4

(Fault Code)

Explanation of Codes	Code No.			
S-Tab SW. Data				
• S-Tab SW. is off.	1			
• S-Tab SW. is on.	2			
Take Up and Supply Photo Sensor Data				
• No light detected at either sensor.		1		
• Take Up Photo Sensor detected at beginning of tape.		2		
• Supply Photo Sensor detected at end of tape.		3		
• Light detected at both sensors.		4		
Present Mechanism Position Code				
Mechanism Position is indicated. (Refer to Fig. 1-5.)			1 2 3 4 5 6 7 8 9 A B C D	
Lock Code (See Note)				
• VCR is not in shut-off condition.				0
• Reel lock.				1
• Cylinder lock.				2
• Exceeds loading/unloading time. (Mechanism Lock)				3
• Exceeds Cassette loading/unloading time. (Cassette Lock)				
Tape Unloading (direction)			1	4
Tape Loading (direction)			2	4

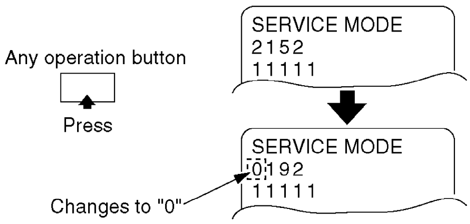
Fig. 1-5


Mode
Select SW.
LOAD
UNLOAD
REV
STOP
PLAY/CUE
/SLOW/STILL
BRAKE
FF/REW
EJECT
CASSETTE
DOWN
1
2
3
4
5
6
7
8
9
A
B
C
D
C B A

Mechanism position	EJECT		CASSETTE DOWN		STOP		REV		PLAY/CUE/ SLOW/STILL		BRAKE		FF/REW
position code	1	2	3	4	5	6	7	8	9	A	B	C	D

3. Press any operation button except for POWER on either the unit, or the remote to detect that a key has been pressed.
The 1st digit changes to "0" only when key is detected.

Fig. 1-6


Any operation button
Press
Changes to "0"
SERVICE MODE
2152
11111
SERVICE MODE
0192
11111

Note:

When 1 to 4 listed in Lock code occurs, the VCR stops and all VCR function buttons except for power become non-operational.

5.1.2. SERVICE POSITION

5.1.2.1. Service Position

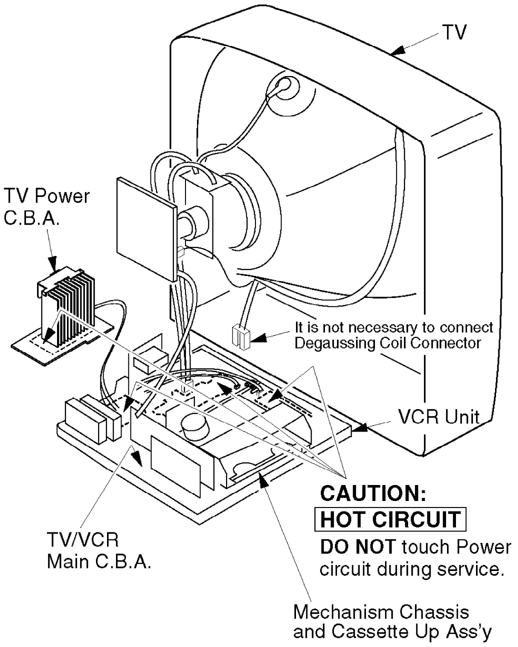
Service Position	Purpose
Service Position (1)	Mechanism check Mechanical adjustment Electrical adjustment
Service Position (2)	TV/VCR Main C.B.A. check

CAUTION:

HOT CIRCUIT(Primary circuit) exists on the TV/VCR Main C.B.A. and the TV Power C.B.A. Use extreme care to prevent accidental shock when servicing.

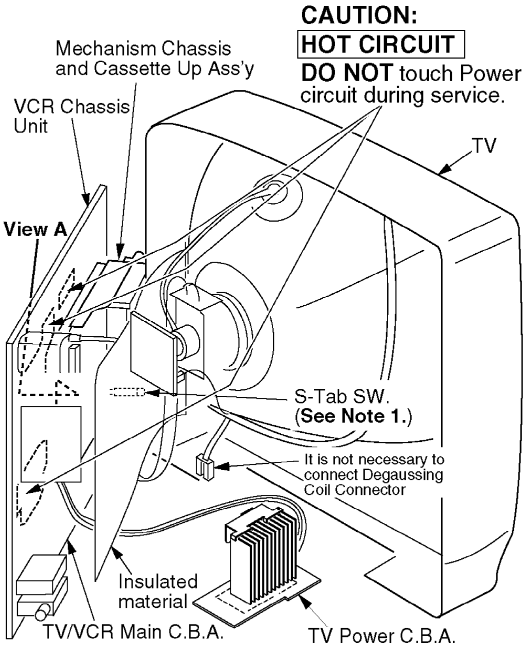
5.1.2.1.1. Service Position (1)

Fig. 2-1


TV
TV Power
C.B.A.
It is not necessary to connect
Degaussing Coil Connector
VCR Unit
CAUTION:
HOT CIRCUIT
DO NOT touch Power
circuit during service.
TV/VCR
Main C.B.A.
Mechanism Chassis
and Cassette Up Ass'y

5.1.2.1.2. Service Position (2)

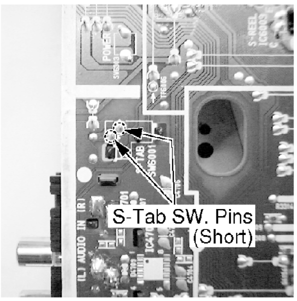
Fig. 2-2


CAUTION:
HOT CIRCUIT
DO NOT touch Power circuit during service.
Mechanism Chassis and Cassette Up Ass'y
VCR Chassis Unit
TV
View A
S-Tab SW. (See Note 1.)
It is not necessary to connect Degaussing Coil Connector
Insulated material
TV/VCR Main C.B.A.
TV Power C.B.A.

Note:

1. **When recording in Service Position (2), short the S-Tab SW. Pins on foil side of TV/VCR Main C.B.A. to turn this SW. on.**

Fig. 2-3


S-Tab SW. Pins
(Short)

TV/VCR Main C.B.A. (foil side)

View A

Alternative method:
Cover the S-Tab SW. with masking tape.

2. **When disassembling/assembling, refer to "CABINET SECTION" in DISASSEMBLY/ASSEMBLY PROCEDURES.**

5.1.3. HOT CIRCUIT

Primary circuit exists on the TV/VCR Main C.B.A. and the TV Power C.B.A.
This circuit is identified as " HOT " on the C.B.A. and in the Service Manual. Use extreme care to prevent accidental shock when servicing.

5.1.4. SERVICE MODE

In order to inhibit detection of the Supply& Takeup Photo Transistors, Reel Sensor, and Cylinder Lock, place a jumper between TP6001 and GND.
In this mode, Mechanism movement can be confirmed. When removing Cassette Up Ass'y, it can be confirmed without a cassette.
To release from this mode, remove the jumper between TP6001 and GND.

5.1.5. CAUTION FOR INSTALLATION OF VCR UNIT

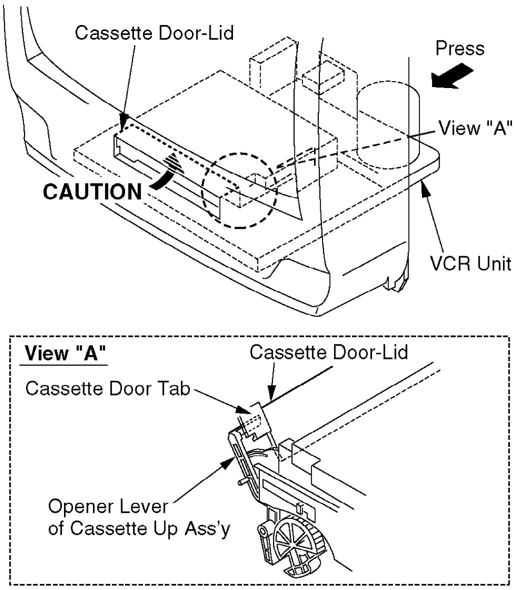
CAUTION:

Opener Lever may be damaged when VCR Unit is installed, with Cassette Door-Lid and Opener Lever of Cassette Up Ass'y set incorrectly.

Install the VCR Unit as follows:

1. **Swing the Cassette Door-Lid all the way open until the Cassette Door tab clears the Opener Lever.**
2. **Make sure that all guide tabs are aligned properly. Then, press the VCR Unit straight in.**

Fig. 3

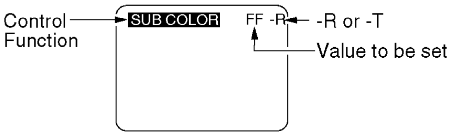

Cassette Door-Lid
Press
View "A"
CAUTION
VCR Unit
View "A"
Cassette Door-Lid
Cassette Door Tab
Opener Lever
of Cassette Up Ass'y

5.1.6. HOW TO INITIALIZE MEMORY IC

After the Memory IC (IC6004) or TV/VCR Main C.B.A. is replaced, be sure to set the Default value to Memory IC as shown in "Memory IC Reference Table" below.

1. **Press and hold STOP, PLAY, and VOL DOWN buttons on the unit together over 5 seconds with no cassette inserted.**
   The adjustment overlay will appear to Enter EVR Adjustment mode.

Fig. 4-1



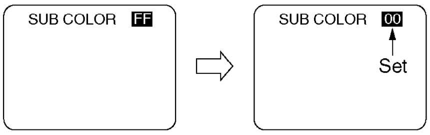
Note:
This unit has two Tuner.
-R: UHF/VHF TUNER /TV DEMODULATOR 1 UNIT
-T: UHF/VHF TUNER /TV DEMODULATOR 2 UNIT

2. **Set the Default value of all Control functions using a remote control as shown in "Memory IC Reference Table."**

   Note:

   For Selecting Control functions and setting Default value, refer to " HOW TO ENTER EVR ADJUSTMENT MODE" and "HOW TO ENTEREVR PG SHIFTER ADJUSTMENT MODE" in ELECTRICAL ADJUSTMENT procedures.

   Fig. 4-2

3. **Press and hold STOP, PLAY, and VOL DOWN buttons on the unit together over 5 seconds again or press the POWER button OFF to release EVR Adjustment Mode.**

   The Default value will be written to Memory IC (IC6004).

4. **Perform all EVR Adjustments. (Refer to "EVR (Electronic Variable Register) ADJUSTMENT WITH THE REMOTE CONTROL" in ELECTRICAL ADJUSTMENT procedures.)**

Memory IC Reference Table

Control functions	Address	Range	Default
SUB COLOR	00	C0 — FF, 00 — 3F	**00**
SUB TINT	01	E0 — FF, 00 — 1F	**00**
SUB BRIGHT	02	C0 — FF, 00 — 3F	**F0**
CONTRAST	03	C1 — FF, 00	**00**
SUB SHARPNESS	04	E0 — FF, 00 — 1F	**F0**
R CUT -OFF	05	00 — 7F	**1E**
G CUT -OFF	06	00 — FD	**3C**
B CUT -OFF	07	00 — FD	**3C**
G DRIVE	08	00 — 7F	**40**
B DRIVE	09	00 — 7F	**40**
SUB CONTRAST	0A	00 — 0F	**06**
H CENTER	0B	00 — 0F	**08**
SUB V	0C	00 — 03	**00**
V SIZE	0D	00 — 7F	**40**
V POSITION	0E	00 — 7F	**40**
ANR CTL	10	00 — EF	**89**
PICTURE CTL	11	00 — EF	**86**
VV COLOR	12	C0 — FF, 00 — 3F	**00**
VV TINT	13	E0 — FF, 00 — 1F	**00**
VV SHARPNESS	14	E0 — FF, 00 — 1F	**ED**
PG SHIFTER	15	01 — FD	**80**
FM ANT	18	00 — 01	**00/01**
FREE RUN	19	00 — 01	**00**
NA VXA	1A	00 — FD	**92**
NB VXA	1B	00 — FD	**1A**
NC VXA	1C	00 — FD	**1A**
ND VXA	1D	00 — FD	**92**
SA VXA	1E	00 — FD	**A3**
SB VXA	1F	00 — FD	**1A**
SC VXA	20	00 — FD	**1A**
SD VXA	21	00 — FD	**A3**
NA HXA	22	00 — FD	**63**
NB HXA	23	00 — FD	**63**
NC HXA	24	00 — FD	**06**
ND HXA	25	00 — FD	**06**
SA HXA	26	00 — FD	**72**
SB HXA	27	00 — FD	**72**
SC HXA	28	00 — FD	**06**
SD HXA	29	00 — FD	**06**
COLOR	2A	00 — FD	**2D**
VCOLOR	2B	00 — FD	**00**
TINT	2C	00 — FD	**EE**
PCONTRAST	2D	80 — FD	**C0**
VCONTRAST	2E	80 — FD	**88**
BH/M	2F	20 — 23	**22**
BG START	30	00 — 3F	**0D**
YDL	31	00 — 0F	**04**
ADJ	32	00 — 0F	**05**
Y OFFSET	33	80 — 9F	**88**
BGY	34	40 — 4F	**49**
SYNC DELAY	35	00 — 03	**00**
STB DLY	36	00 — FD	**1A**
L LEVEL	37	00 — FD	**1A**
MVC	38	00 — 03	**00**
R-SUB COLOR	39	C0 — FF, 00 — 3F	**00**
R-SUB TINT	3A	E0 — FF, 00 — 1F	**00**
R-SUB BRIGHT	3B	C0 — FF, 00 — 3F	**F0**
R-CONTRAST	3C	C1 — FF, 00	**00**
R-SUB CONTRAST	3D	00 — 0F	**06**

Note:

1. Address is not displayed on the TV screen.
   Other Addresses except above are not used.
2. In models for USA, set the Default value of
   FM ANT to "00."
   In models for CANADA, set the Default value of
   FM ANT to "01."

5.1.7. METHOD FOR LOADING/UNLOADING OF MECHANISM

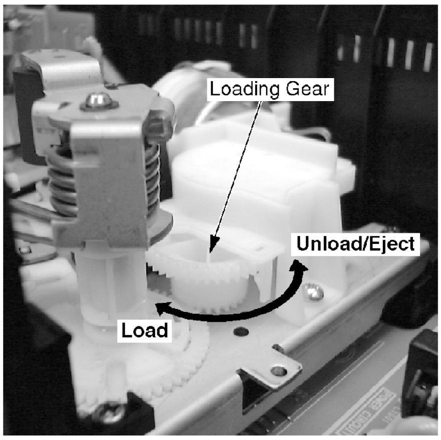
5.1.7.1. (Manual Method)

Turn the Loading Gear clockwise (for loading) or counterclockwise (for unloading) using needlenose pliers etc.

Note:

Do not use this method if Mechanism is jammed or locked.

Fig. 5-1


Loading Gear
Unload/Eject
Load

5.1.7.2. (Electrical Method)

Apply+10.0 V DC Power Supply to the Loading Motor terminals.

Loading

DC+ to Portion "a," DC - to Portion "b"

Unloading

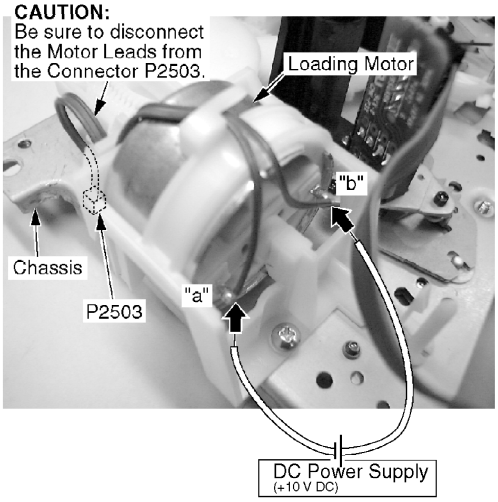
DC - to Portion "a," DC+ to Portion "b"

CAUTION:

Before applying DC Power Supply, be sure to disconnect the Motor Leads from the Connector P2503.

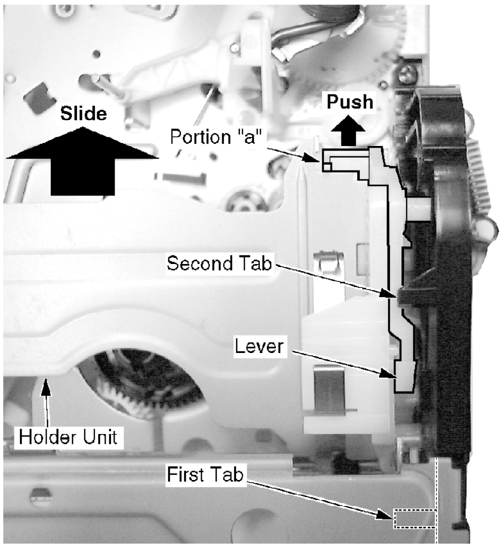
Otherwise, the Loading Motor Drive IC (IC2501) may be damaged.

Fig. 5-2


CAUTION:
Be sure to disconnect the Motor Leads from the Connector P2503.
Loading Motor
"b"
Chassis
"a"
P2503
DC Power Supply
(+10 V DC)

When loading without a cassette, push Portion "a" on the Holder Unit of Cassette Up Ass'y so that the Lever clear the First Tab and Second Tab.

Fig. 5-3


Slide
Push
Portion "a"
Second Tab
Lever
Holder Unit
First Tab

5.1.8. HOW TO REMOVE A JAMMED TAPE

CAUTION:

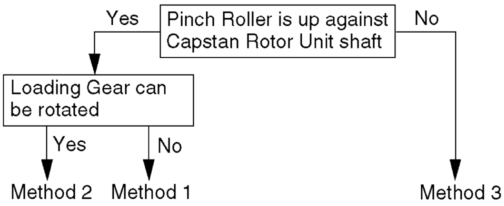
Wiper Arm Unit may be damaged or its spring may be out of place when the jammed tape is removed by force.

Remove a jammed tape as follows:

5.1.8.1. Manual Method

When a tape jam is encountered, check the tape loading condition and use the following procedure to remove a tape jam.

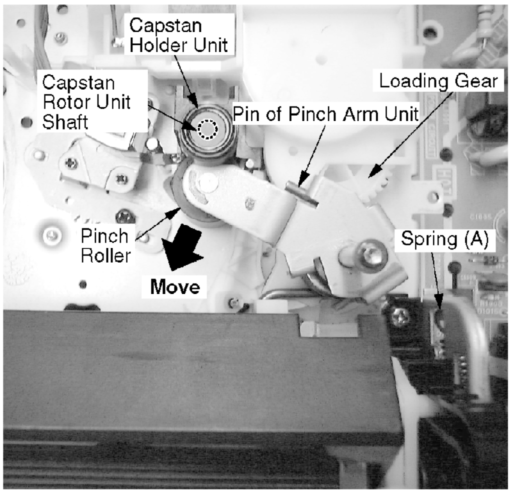
Fig. 6-1


Pinch Roller is up against Capstan Rotor Unit shaft
Yes
No
Loading Gear can be rotated
Yes
No
Method 2
Method 1
Method 3

5.1.8.1.1. Method -1:

1. **Move the Pinch Roller Unit out by unhooking the Pin of Pinch Arm Unit so that the Pinch Roller is separated from the Capstan Rotor Unit shaft.**

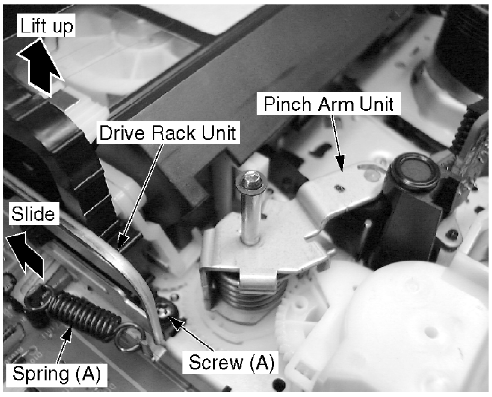
Fig. 6-2


Capstan Holder Unit
Capstan Rotor Unit Shaft
Loading Gear
Pin of Pinch Arm Unit
Pinch Roller
Spring (A)
Move

Top View

2. **Remove the tape from the tape path.**
3. **Rewind the tape into the cassette by rotating the Center Clutch Unit counterclockwise.**
4. **Unhook Spring (A) of the Drive Rack Arm.**
5. **Remove Screw (A).**
6. **Lift the Cassette Up Ass'y. While pulling the Cassette Up Ass'y out far enough so that it clears the Drive Rack Arm, slide the Drive Rack Unit as indicated by the arrow to remove the cassettetape from the Cassette Up Ass'y.**
7. **Check the cause of mechanical trouble and repair.**

Fig. 6-3


Lift up
Pinch Arm Unit
Drive Rack Unit
Slide
Spring (A)
Screw (A)

5.1.8.1.2. Method -2:

1. **Rotate Loading Motor counterclockwise with needlenose pliers, etc. so that the Pinch Roller is separated from the shaft of the Capstan Rotor Unit.**

2. Perform Step 2 through Step 7 of Method -1.

5.1.8.1.3. Method -3:

1. Perform Step 2 through Step 7 of Method -1.

Note:

After repairing mechanical trouble, make sure that all gear alignments are correct, especially the Wiper Arm Unit and Drive Rack Unit of Cassette Up Ass'y. (Refer to "EJECTPosition Confirmation" in DISASSEMBLY/ASSEMBLY PROCEDURES.)

5.1.8.2. Electrical Method

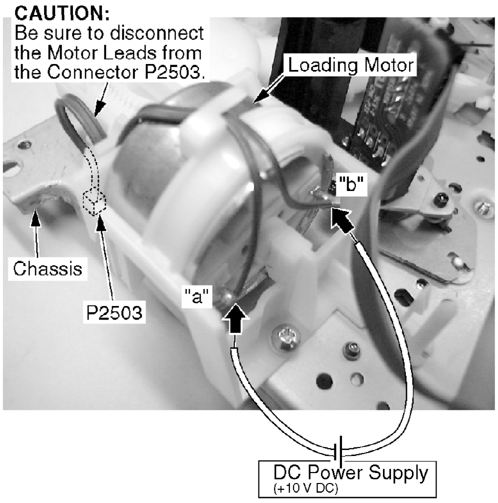
Electrical method can only be performed when the mechanism is moved by rotating the Loading Gear.

CAUTION:

1. Before applying DC Power Supply, be sure to disconnect the Motor Leads from the Connector P2503.
   Otherwise, the Loading Motor Drive IC (IC2501) may be damaged.
2. If loading does not start in approx. 2 seconds after DC Power Supply is applied, DO NOT continue to apply DC Power Supply. Instead, perform "Manual Method."

1. Be sure to disconnect the Motor Leads from the Connector P2503.
2. Apply+10.0 V DC Power Supply to the Loading Motor terminals.
3. When the Loading Posts reach the fully unloaded position, remove the Power Supply.

Fig. 7



CAUTION:
Be sure to disconnect the Motor Leads from the Connector P2503.

4. Rewind the tape into the cassette by turning the Center Clutch

Unit counterclockwise.

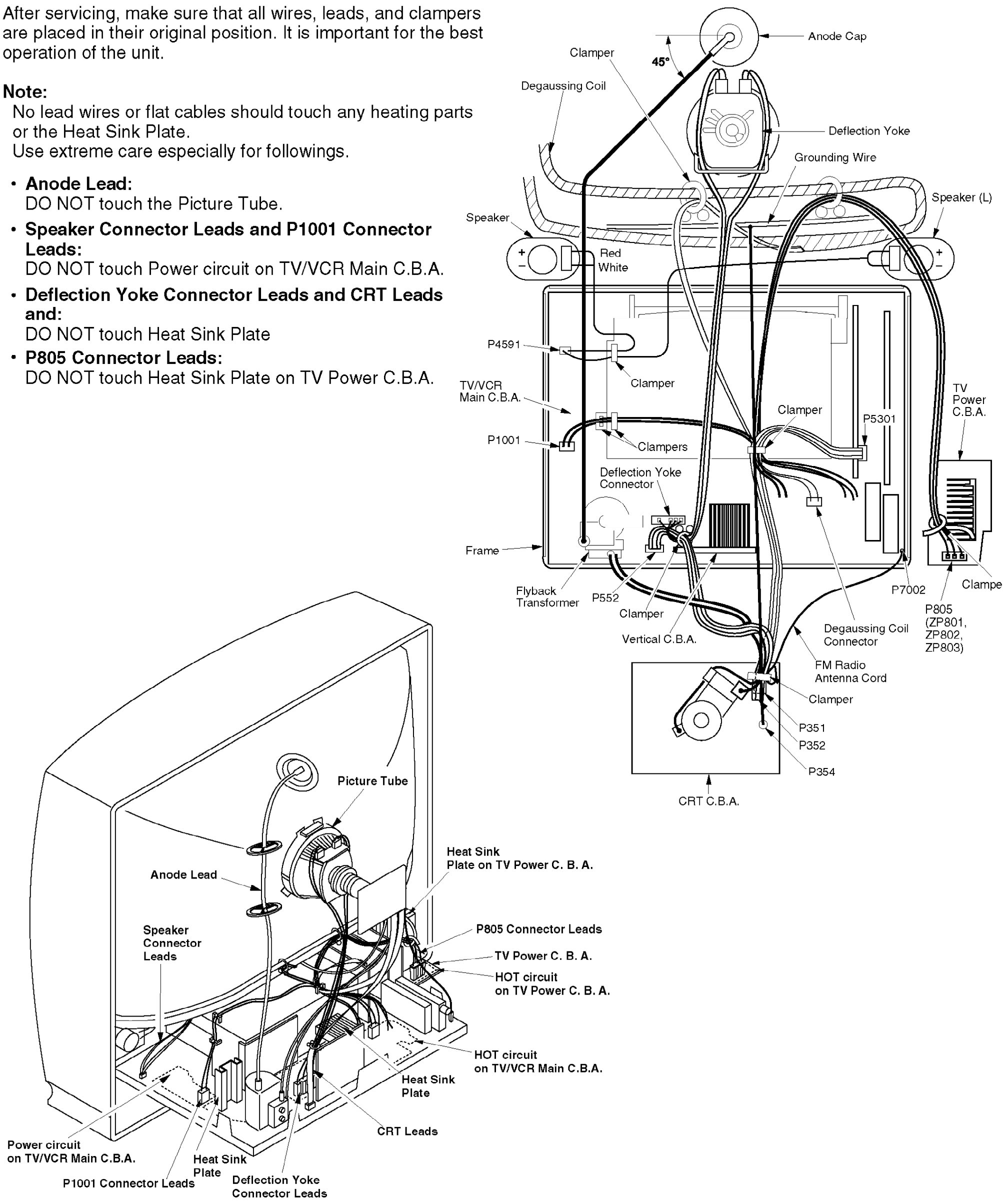
5. Eject the cassette by applying+10.0 V DC Power Supply again.

5.1.9. VCR Test Mode

High Voltage is inhibited by connecting Jumper J801 on the TV/VCR Main C.B.A., however, it is possible to check the VCR even when CRT C.B.A. and Anode Cap are removed.

5.1.10. WIRE AND LEAD POSITION DIAGRAM

Fig. 8



After servicing, make sure that all wires, leads, and clampers are placed in their original position. It is important for the best operation of the unit.

Note:
No lead wires or flat cables should touch any heating parts or the Heat Sink Plate.
Use extreme care especially for followings.

- **Anode Lead:**
  DO NOT touch the Picture Tube.
- **Speaker Connector Leads and P1001 Connector Leads:**
  DO NOT touch Power circuit on TV/VCR Main C.B.A.
- **Deflection Yoke Connector Leads and CRT Leads and:**
  DO NOT touch Heat Sink Plate
- **P805 Connector Leads:**
  DO NOT touch Heat Sink Plate on TV Power C.B.A.

Anode Cap
Clamper
45°
Degaussing Coil
Deflection Yoke
Grounding Wire
Speaker (L)
Speaker
Red
White
P4591
Clamper
TV/VCR Main C.B.A.
Clamper
P5301
TV Power C.B.A.
P1001
Clampers
Deflection Yoke Connector
Frame
Flyback Transformer
P552
Clamper
Vertical C.B.A.
P7002
Clamper
P805 (ZP801, ZP802, ZP803)
Degaussing Coil Connector
FM Radio Antenna Cord
Clamper
P351
P352
P354
CRT C.B.A.
Picture Tube
Anode Lead
Heat Sink Plate on TV Power C. B. A.
Speaker Connector Leads
P805 Connector Leads
TV Power C. B. A.
HOT circuit on TV Power C. B. A.
HOT circuit on TV/VCR Main C.B.A.
Heat Sink Plate
CRT Leads
Power circuit on TV/VCR Main C.B.A.
Heat Sink Plate
P1001 Connector Leads
Deflection Yoke Connector Leads

5.1.11. DEFEATING THE AUTO TRACKING

To defeat the Auto Tracking Function, place the instrument in the STOP mode and place a jumper between TP6003 and TP6009 on the TV/VCR Main C.B.A. The tracking will be placed in the neutral position.

5.1.12. HOW TO SET TRACKING TO THE NEUTRAL POSITION

Ejecting the cassette tape and then reinserting it will reset the tracking to the Neutral position.

5.1.13. BLACK SCREWS ON THE CHASSIS

Black Screws are used on the Mechanism Chassis to identify screws that require adjustment.

5.1.14. HOW TO RESET ALL COMBINATION VCR MEMORY FUNCTIONS

To reset (clear) the select language, channel auto set and set clock functions to their initial power on condition (power on, no cassette inserted), hold down the PLAY and FF buttons on the unit together for more than 5 seconds.
Power will shut off.

5.1.15. HOW TO CONFIRM AUTO CLOCK SET FEATURE

1. **Connect an RF cable from the output of one unit to the input of the test unit.**
2. **Select corresponding RF channels.**
3. **Playback a recording of P.B.S. channel including clock set data and confirm this feature.**

5.1.16. VARIABLE VOLTAGE ISOLATION TRANSFORMER

An Isolation Transformer should always be used during the servicing of Combination VCR whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidentsresulting in personal injury from electrical shocks. It will also protect Combination VCR from being damaged by accidental shorting that may occur during servicing.
Also, when troubleshooting the above type of Power Supply Circuit, a variable isolation transformer is required in order to increase the input voltage slowly.

5.1.17. SPECIAL NOTE

All integrated circuits and many other semiconductor devices are electrostatically sensitive and therefore require the special handling techniques described under the "ELECTROSTATICALLY SENSITIVE (ES) DEVICES" section of this service manual.

5.1.18. REPLACEMENT PROCEDURE FOR LEADLESS (CHIP) COMPONENTS

The following procedures are recommended for the replacement of the leadless components used in this unit.

1. **Preparation for replacement**
   - **A. Soldering Iron**
     Use a pencil-type soldering iron that uses less than 30 watts.
   - **B. Solder**
     Eutectic Solder (Tin 63%, Lead 37%) is recommended.
   - **C. Soldering time**
     Do not apply heat for more than 4 seconds.
   - **D. Preheating**
     Leadless capacitor must be preheated before installation. -

(266°F ~ 302°F)

(130°C ~150°C) for about two minutes.

Note:

A. Leadless components must not be reused after removal.

B. Excessive mechanical stress and rubbing of the component electrode must be avoided.

2. Removing the leadless component

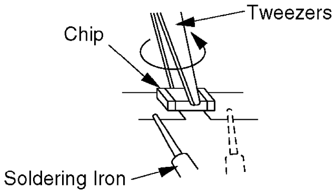
Grasp the leadless component body with tweezers and alternately apply heat to both electrodes. When the solder on both electrodes is melted, remove the leadless component with a twisting motion.

Note:

A. Do not attempt to lift the component off the board until the component is completely disconnected from the board by a twisting action.

B. Be careful not to break the copper foil on the printed circuit board.

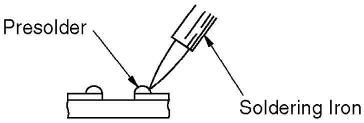
Fig. 9-1



3. Installing the leadless component

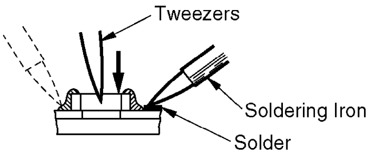
A. Presolder the contact points on the circuit board.

Fig. 9-2



B. Press the part downward with tweezers and solder both electrodes as shown below.

Fig. 9-3



Note:

Do not glue the replacement leadless component to the circuit board.

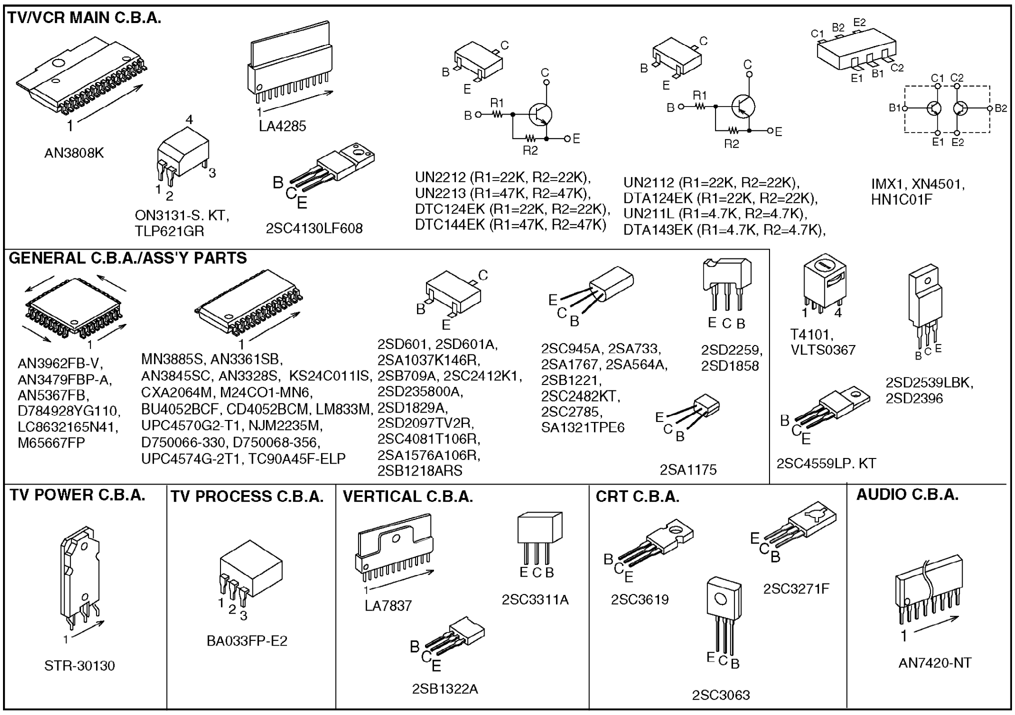
5.1.19. MODEL NO. IDENTIFICATION MARK

Use Marks shown in the chart below to distinguish the different models included in this Service Manual.

MODEL	MARK
PV-C2780	A
PV-C2780-K	B
Not Used	Z

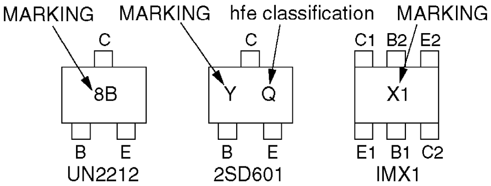
Note:
Refer to Item 3 of Schematic Diagram Notes of Schematic Diagram and Circuit Board Layout Notes, for mark "Z."

5.2. IC, TRANSISTOR AND CHIP PART INFORMATION

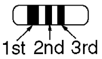

TV/VCR MAIN C.B.A.
1
AN3808K
1
LA4285
4
3
1
2
ON3131-S. KT,
TLP621GR
B
C
E
2SC4130LF608
C
B
E
C
R1
B
R2
E
UN2212 (R1=22K, R2=22K),
UN2213 (R1=47K, R2=47K),
DTC124EK (R1=22K, R2=22K),
DTC144EK (R1=47K, R2=47K)
C
B
E
C
R1
B
R2
E
UN2112 (R1=22K, R2=22K),
DTA124EK (R1=22K, R2=22K),
UN211L (R1=4.7K, R2=4.7K),
DTA143EK (R1=4.7K, R2=4.7K),
C1
B2
E2
E1
B1
C2
C1
C2
B1
B2
E1
E2
IMX1, XN4501,
HN1C01F
GENERAL C.B.A./ASS'Y PARTS
1
AN3962FB-V,
AN3479FBP-A,
AN5367FB,
D784928YG110,
LC8632165N41,
M65667FP
1
MN3885S, AN3361SB,
AN3845SC, AN3328S, KS24C011IS,
CXA2064M, M24CO1-MN6,
BU4052BCF, CD4052BCM, LM833M,
UPC4570G2-T1, NJM2235M,
D750066-330, D750068-356,
UPC4574G-2T1, TC90A45F-ELP
C
B
E
2SD601, 2SD601A,
2SA1037K146R,
2SB709A, 2SC2412K1,
2SD235800A,
2SD1829A,
2SD2097TV2R,
2SC4081T106R,
2SA1576A106R,
2SB1218ARS
E
C
B
2SC945A, 2SA733,
2SA1767, 2SA564A,
2SB1221,
2SC2482KT,
2SC2785,
SA1321TPE6
E C B
2SD2259,
2SD1858
E
C
B
2SA1175
1
4
T4101,
VLTS0367
B C E
2SD2539LBK,
2SD2396
B
C
E
2SC4559LP. KT
TV POWER C.B.A.
1
STR-30130
TV PROCESS C.B.A.
1
2
3
BA033FP-E2
VERTICAL C.B.A.
1
LA7837
E C B
2SC3311A
B
C
E
2SB1322A
CRT C.B.A.
B
C
E
2SC3619
E
C
B
2SC3271F
E C B
2SC3063
AUDIO C.B.A.
1
AN7420-NT

5.2.1. HOW TO READ THE IDENTIFICATION MARK OF CHIP COMPONENTS.

MARKING	PART NO.	MARKING	PART NO.
B	2SB709A	6B	UN2112
B	2SC4081T106R	8B	UN2212
B	2SB1218ARS	5H	XN4501
F	2SA1037K146R	6Q	UN211L
F	2SA1576A106R	X1	IMX1
Y	2SD601	13	DTA143EK
Z	2SD601A	15	DTA124EK
Z	2SD1819A	1A	MA110
B1	2SC2412K1	1B	MA111



5.2.2. HOW TO READ THE VALUES OF THE CYLINDRICAL TYPE CHIP COMPONENTS.



The widest color band must be read first for value.

1. RESISTOR

There are two types (ERD10LLJ... and ERD10TLJ...) of chip parts.

A. ERD10LLJ: Refer to above type.

B. ERD10TLJ: The narrow color band must be read first for value. If this part is included in the parts list, be sure that the color band is read properly when servicing.

2. CAPACITOR

Because of the width of the color bands, the reading direction cannot be specified. However, the color band can be read on either side. Be sure to confirm the value using the schematic diagram.

CAUTION :

**Once chip parts are removed, they must not be reused.
Always use a new part when installing a chip part.**

6. DISASSEMBLY/ASSEMBLY PROCEDURES

6.1. CABINET SECTION

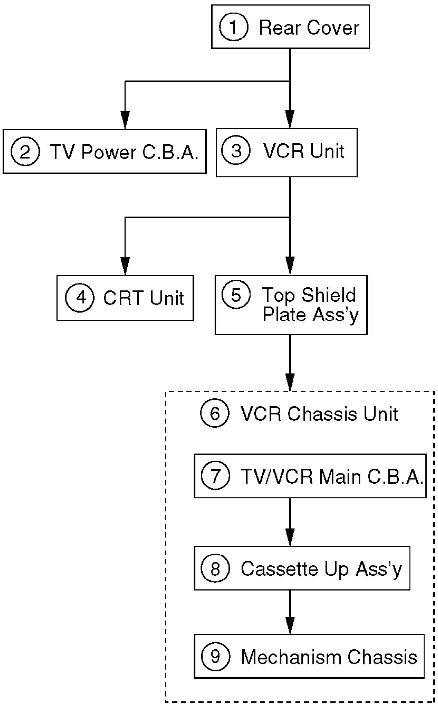
6.1.1. Disassembly Flowchart

Perform all disassembly procedures in the order described in the "Disassembly Flowchart" shown below. When reassembling, use the reverse procedure.

CAUTION:

Disconnect AC plug before disassembly.

Fig. D1


① Rear Cover
② TV Power C.B.A.
③ VCR Unit
④ CRT Unit
⑤ Top Shield Plate Ass'y
⑥ VCR Chassis Unit
⑦ TV/VCR Main C.B.A.
⑧ Cassette Up Ass'y
⑨ Mechanism Chassis

6.1.2. Disassembly Method

STEP /LOC. No.	PART	Fig. No.	REMOVE	Note
①	Rear Cover	D2	9(S-1)	---
②	TV Power C.B.A.	D2 D3	(S-2), Clampers, P805 (ZP801, ZP802, ZP803)	---
③	VCR Unit	D3 D4	Anode Cap, P354, CRT C.B.A., Deflection Yoke Connector, Degaussing Coil Connector, Clampers, P4591, P552 2 Tabs, 2 Guide Tabs	1
④	CRT Unit	D2	4(S-3)	2
⑤	Top Shield Plate Ass'y	D3 D5	P1001, 4(S-4), (S-5)	---
⑥	VCR Chassis Unit	D5	2(S-6), 2(S-7), (S-8), 6(L-1)	3
⑦	TV/VCR Main C.B.A.	D5	P3001, P6202, P6201, P4001	4
⑧	Cassette Up Ass'y	D5	2(S-9), (S-10), (P-1), (L-2)	5
⑨	Mechanism Chassis	D5	----------------	---

↑A ↑B ↑C ↑D ↑E

How to read chart shown above:

A:Order of Procedure steps.

When reassembling, perform steps(s) in reverse order.

These numbers are also used as the identification (location) No. of parts in Figures.

B: Part to be removed or installed.

C: Fig. No. showing Procedure or Part Location.

D: Identification of part to be removed, unhooked, unlocked, released, unplugged or unsoldered.

6(S-1)= 6 Screws (S-1), 6(L-1)= 6 Locking Tabs (L-1),

(P-1)= Spring (P-1)

E: Refer to "Notes in chart."

Fig. D2

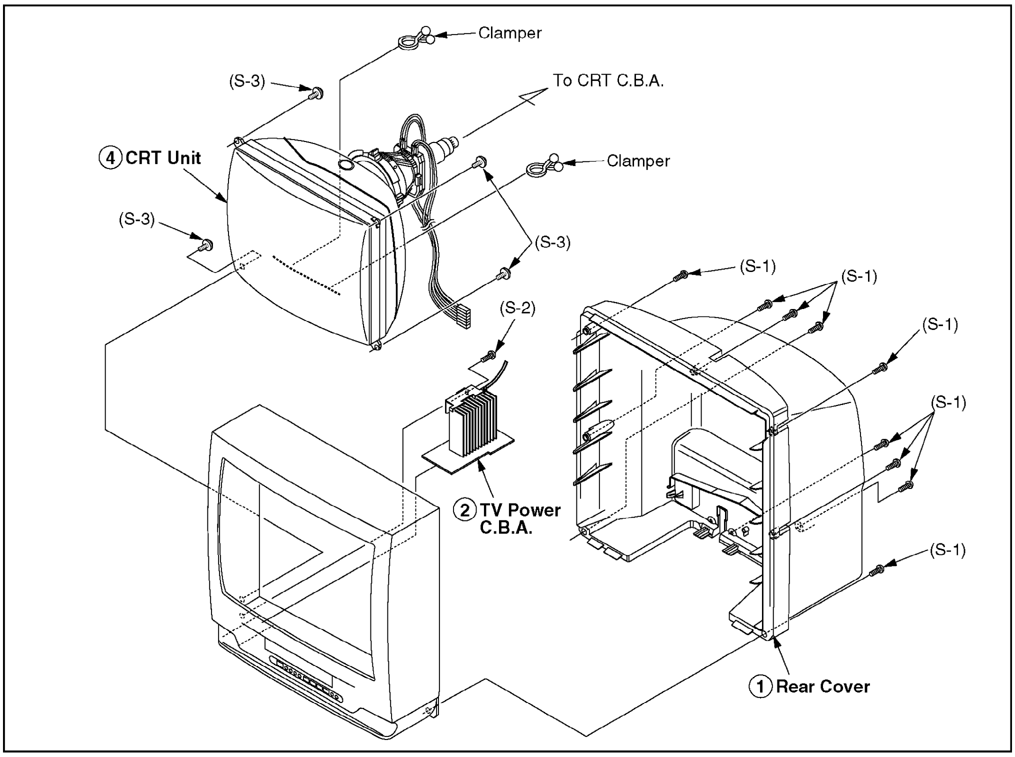

Clamper
(S-3)
To CRT C.B.A.
④ CRT Unit
Clamper
(S-3)
(S-3)
(S-1)
(S-1)
(S-2)
(S-1)
(S-1)
② TV Power C.B.A.
(S-1)
① Rear Cover

Fig. D3

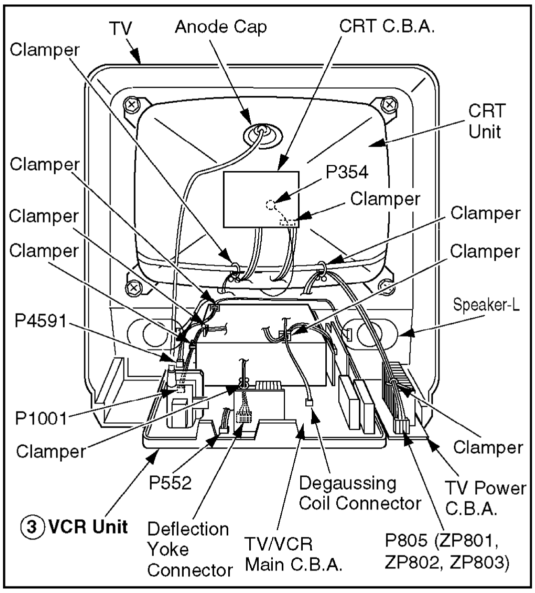

Clamper
TV
Anode Cap
CRT C.B.A.
CRT Unit
P354
Clamper
Clamper
Clamper
Clamper
Clamper
Clamper
Speaker-L
P4591
P1001
Clamper
Clamper
③ VCR Unit
P552
Deflection Yoke Connector
TV/VCR Main C.B.A.
Degaussing Coil Connector
TV Power C.B.A.
P805 (ZP801, ZP802, ZP803)

Fig. D4

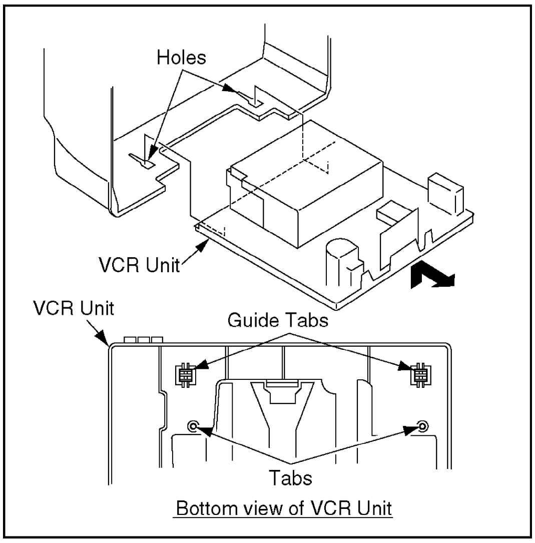
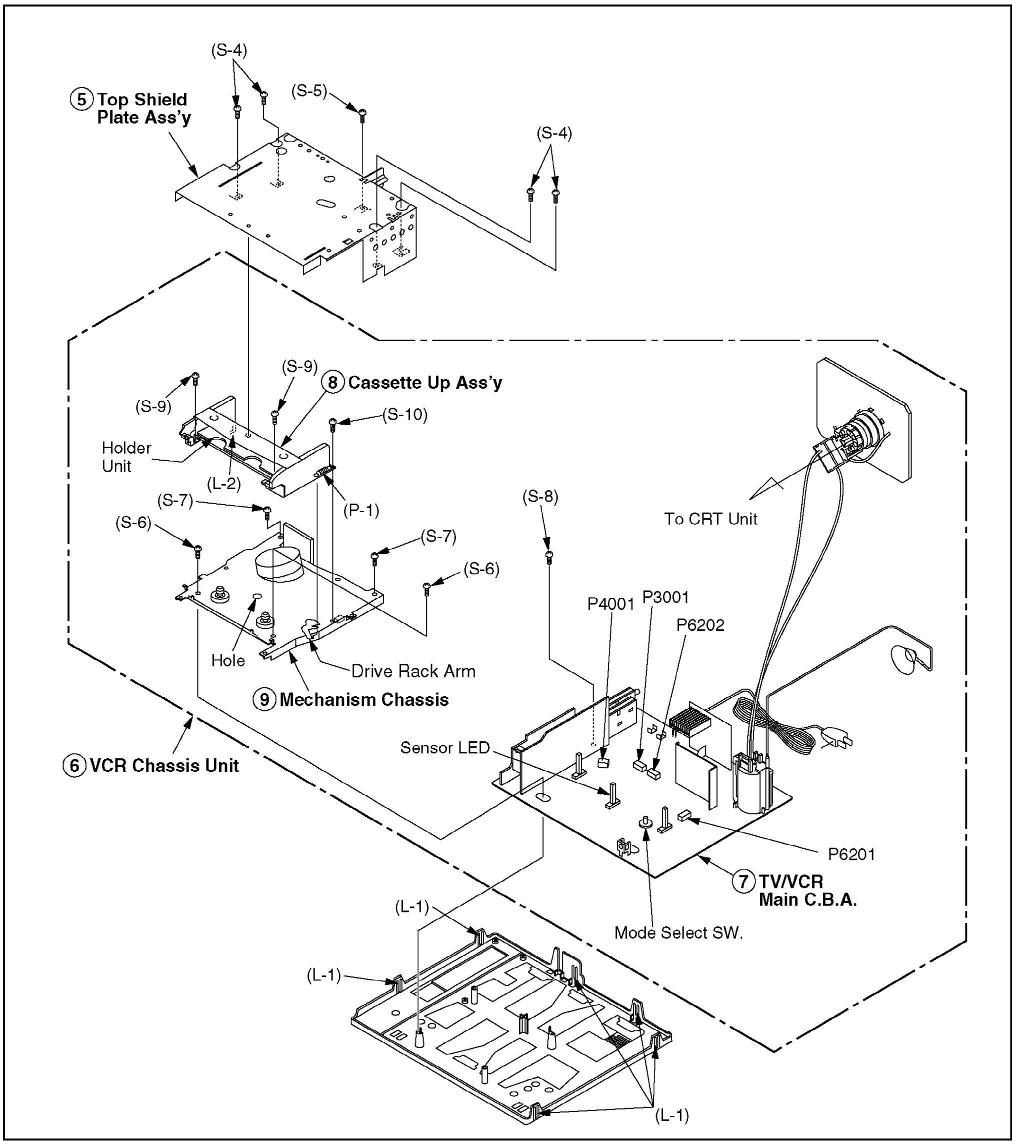

Holes
VCR Unit
VCR Unit
Guide Tabs
Tabs
Bottom view of VCR Unit

Fig. D5


(S-4)
⑤ Top Shield Plate Ass'y
(S-5)
(S-4)
(S-9)
⑧ Cassette Up Ass'y
(S-9)
(S-10)
Holder Unit
(L-2)
(P-1)
(S-7)
(S-6)
(S-7)
(S-6)
(S-8)
To CRT Unit
Hole
Drive Rack Arm
⑨ Mechanism Chassis
P4001
P3001
P6202
⑥ VCR Chassis Unit
Sensor LED
P6201
⑦ TV/VCR Main C.B.A.
(L-1)
Mode Select SW.
(L-1)
(L-1)

6.1.2.1. Notes in chart

1. **Installation of VCR Unit**

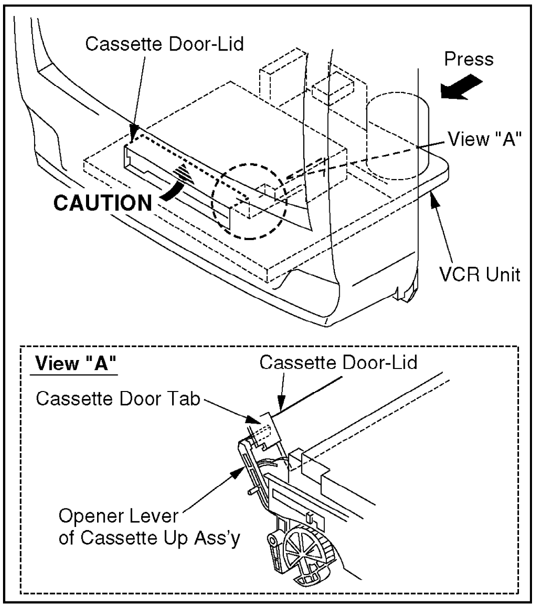
   CAUTION:

   Opener Lever may be damaged when VCR Unit is installed, with Cassette Door-Lid and Opener Lever of Cassette Up Ass'y set incorrectly.

   A. When installing the VCR Unit, swing the Cassette Door-Lid all the way open until the Cassette Door tab clears the Opener Lever.

   B. Make sure that all guide tabs are aligned properly. Then, press the VCR Unit straight in.

Fig. D6


Cassette Door-Lid
Press
View "A"
CAUTION
VCR Unit
View "A"
Cassette Door-Lid
Cassette Door Tab
Opener Lever
of Cassette Up Ass'y

2. **Removal of CRT Unit**

   Place the Unit face down on a soft cloth before removing the CRT Unit.

3. **Installation of VCR Chassis Unit**

   When installing 2 Screws (S-6), slide the Holder Unit of the Cassette Up Ass'y (Refer to "METHOD FOR LOADING/ UNLOADING OF MECHANISM" in SERVICE NOTES) totighten screws. Then, slide it back to the EJECT Position.

   Make sure that Mechanism and Cassette Up Ass'y are in the EJECTPosition. (Refer to "EJECT Position Confirmation" in DISASSEMBLY/ASSEMBLYPROCEDURES.)

4. **Removal of TV/VCR Main C.B.A.**

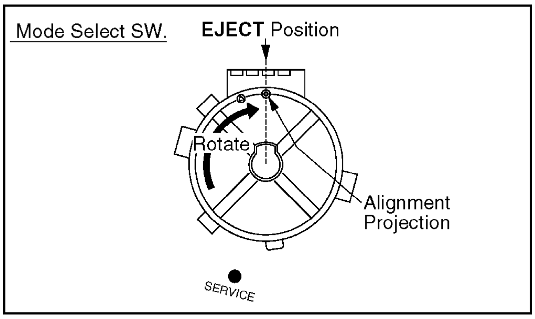
Work carefully so as not to break Sensor LED when lifting the Mechanism Chassis and Cassette Up Ass'y.

Installation of Mechanism Chassis and Cassette Up Ass'y onto TV /VCR Main C.B.A.

A. Make sure the Mode Select SW. on the TV/VCR Main C.B.A. is in EJECTposition. If not, rotate the Mode Select SW. until the alignment projection isin the EJECTPosition.

B. Make sure the Mechanism and Cassette Up Ass'y are in the EJECTPosition. (Refer to "EJECT Position Confirmation"in DISASSEMBLY/ASSEMBLY PROCEDURES.)

Fig. D7



C. Install the Mechanism Chassis and Cassette Up Ass'y straight onto the TV/VCR Main C.B.A. so that the Sensor LED clears the hole in the Mechanism Chassis and that 4 Connectors (P6201, P6202,P3001, and P4001) are aligned and seated securely.

5. Installation of Cassette Up Ass'y

A. Confirm that the Locking Tab (L-2) under the Cassette Up Ass'y is in Hole on the Mechanism Chassis when installing the Cassette Up Ass'y. Then, slide the Cassette UpAss'y towards the back.

B. When installing 2 Screws (S-8), slide the Holder Unit (Refer to "METHOD FOR LOADING/UNLOADING OF MECHANISM" in SERVICE NOTES) to tighten screws.Then, slide it back to the EJECTPosition.

C. Hook Spring (P-1) to the Drive Rack Arm on the Mechanism Chassis.

6.2. MECHANISM SECTION

6.2.1. Disassembly/Reassembly Method

This procedure starts with the condition that the cabinet parts and TV/VCR Main C.B.A. have been removed.
When reassembling, perform the step(s) in the reverse order.
Perform all disassembly/reassembly and alignments procedures in EJECT Position.

Step/Loc. No.	Prior Step(s)	Part	Fig. No.	Remove	Alignment/Adjustment
①	------------	Grounding Plate Unit	J2-1	(S-1)	Adjustment
②	------------	Full Erase Head	J2-1	(L-1)	
③	1	Cylinder Unit	J2-1	P4092, Unsolder, 2(S-2), 3(S-3), Head Amp C.B.A.	TAPE INTERCHANGEABILITY Adjustment
④	------------	Capstan Belt	J3-1	-	
⑤	------------	Support Angle	J3-1	(S-4), 2(S-5)	
⑥	5	Intermediate Gear B	J3-1	(L-2)	Gear Alignment
⑦	4,5,6	Main Cam Gear	J3-1	Main Cam Push Nut	Gear Alignment
⑧	4	Center Clutch Unit	J4-1	(W-1)	
⑨	4,8	Changing Gear Spring	J4-1	-	
⑩	4,8,9	Changing Gear	J4-1	-	
⑪	4,8,9,10	Idler Arm Unit	J4-1	-	
⑫	------------	Reel Gear	J5-1	2(L-3)	
⑬	4,5,6,7,8,9,10	Main Rod	J5-1	(W-2), (L-4)	Gear Alignment
⑭	------------	Stopper Angle	J6-1	(S-6)	
⑮	4,5,14	Capstan Rotor Unit	J6-1	-	
⑯	4,5,14,15	Oil Seal	J6-1	-	
⑰	4,5,14,15	Capstan Stator C.B.A.	J6-1	P2503, 2(S-7)	
⑱	------------	MR Head	J6-1	(S-8), Unsolder	MR HEAD GAP Adjustment
⑲	4,8,9,10,13	T Loading Arm Unit	J7-1	-	Gear Alignment
⑳	4,5,6,7,8,9,10,13,19	S Loading Arm Unit	J7-1	-	Gear Alignment
㉑	------------	T Brake Unit	J8-1	-	
㉒	------------	Tension Control Arm Unit	J8-1	3(L-5)	
㉓	21	T Reel Table	J8-1	-	
㉔	22	S Reel Table	J8-1	-	
㉕	22	Tension Arm Unit	J8-1	2(L-6), (P-1), (P-2)	
㉖	22,25	Loading Post Base-T Unit	J9	-	P2 AND P3 POST HEIGHT, TAPE INTERCHANGEABILITY Adjustment
㉗	22,25	Loading Post Base-S Unit	J9	-	
㉘	------------	Opener Piece	J10-1	2(L-7)	
㉙	4,5,6,7	Drive Rack Arm	J10-1	-	
㉚	28	Pinch Arm Unit	J10-1	(C-1)	
㉛	28,30	P5 Arm Unit	J10-1	-	
㉜	5,6,28	Intermediate Gear A	J10-1	-	Gear Alignment
㉝	------------	Motor Block Unit	J11-1	2(S-9)	
㉞	------------	Audio Control Head Unit	J11	(S-10)	TAPE INTERCHANGEABILITY Adjustment
㉟	5,6,28,30,32,33	Lift Gear	J11	-	
㊱	4,5,14,15,33	Capstan Holder Unit	J11	3(S-11)	
㊲	22,25	Tension Arm Boss	J11	(L-8)	

↑ A ↑ B ↑ C ↑ D ↑ E ↑ F

How to read chart shown above:

A: Order of Procedure steps.
When reassembling, perform steps(s) in reverse order.
These numbers are also used as the identification (location) No. of parts in Figures.
B: Steps to be completed prior to the current step.
C: Part to be removed or installed.
D: Fig. No. showing Procedure or Part Location.
E: Identification of part to be removed, unhooked, unlocked, released, unplugged or unsoldered.
(S-1) = Screw (S-1), (L-1) = Locking Tab (L-1),
(W-1) = Washer (W-1), (P-1) = Spring (P-1),
(C-1) = Cut Washer (C-1)
F: Alignment/Adjustment which is required when installing or replacing each Parts.

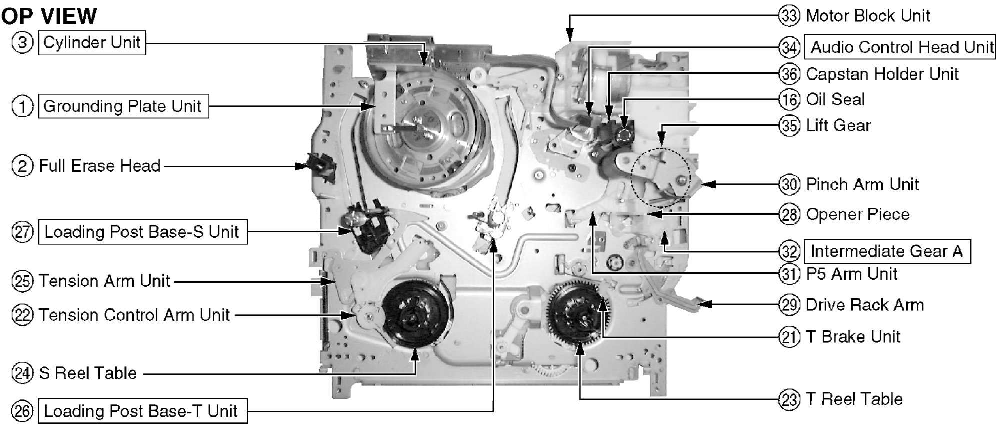
CAUTION:
Removed Cut Washer is not reusable.
If removed, install a new one.

6.2.2. Inner Parts Location

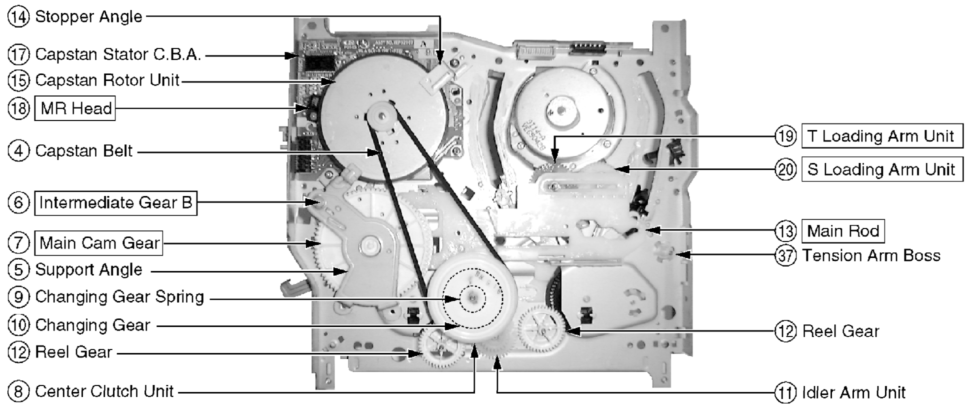
Note: BOX indicates alignment (Gear Alignment or Mechanical Adjustment) required when a part is replaced.

Fig. J1-1

TOP VIEW


③ Cylinder Unit
① Grounding Plate Unit
② Full Erase Head
㉗ Loading Post Base-S Unit
㉕ Tension Arm Unit
㉒ Tension Control Arm Unit
㉔ S Reel Table
㉖ Loading Post Base-T Unit
㉝ Motor Block Unit
㉞ Audio Control Head Unit
㊱ Capstan Holder Unit
⑯ Oil Seal
㉟ Lift Gear
㉚ Pinch Arm Unit
㉘ Opener Piece
㉜ Intermediate Gear A
㉛ P5 Arm Unit
㉙ Drive Rack Arm
㉑ T Brake Unit
㉓ T Reel Table

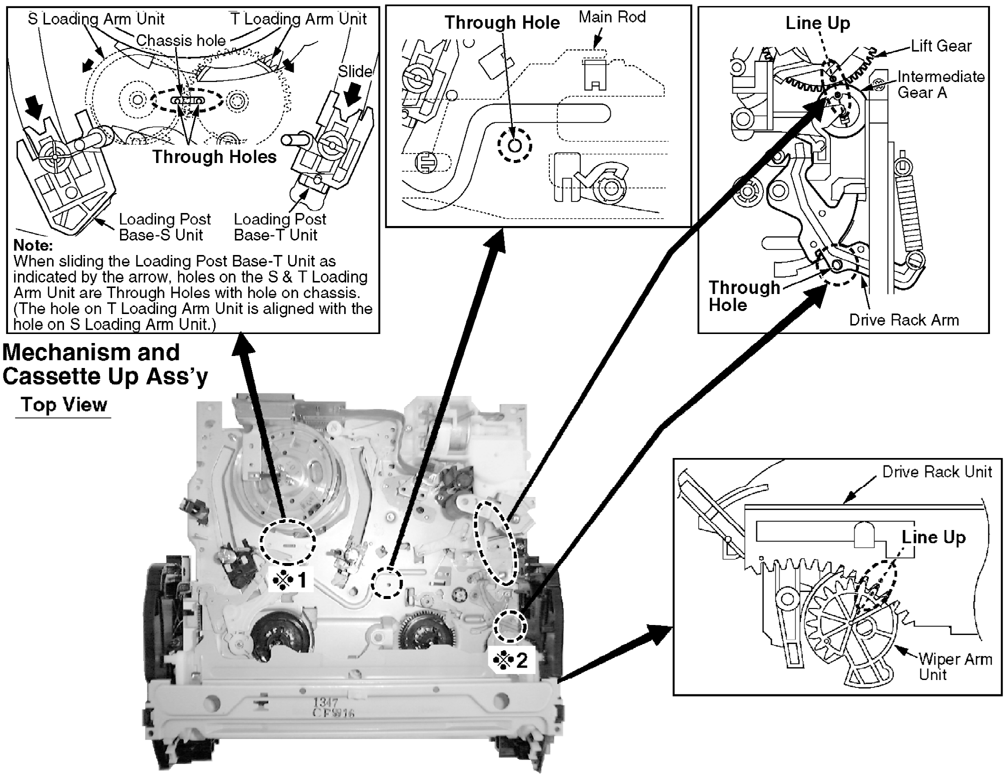
BOTTOM VIEW


⑭ Stopper Angle
⑰ Capstan Stator C.B.A.
⑮ Capstan Rotor Unit
⑱ MR Head
④ Capstan Belt
⑥ Intermediate Gear B
⑦ Main Cam Gear
⑤ Support Angle
⑨ Changing Gear Spring
⑩ Changing Gear
⑫ Reel Gear
⑧ Center Clutch Unit
⑲ T Loading Arm Unit
⑳ S Loading Arm Unit
⑬ Main Rod
㊲ Tension Arm Boss
⑫ Reel Gear
⑪ Idler Arm Unit

6.2.3. EJECT Position Confirmation

Fig. J1-2

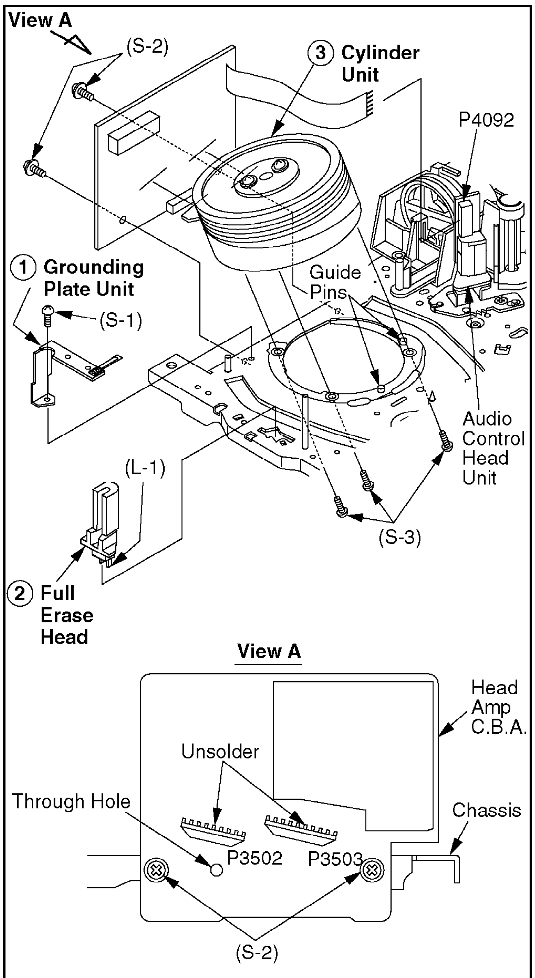
Check the following alignment points to confirm that the Mechanism and Cassette Up Ass'y are in the **EJECT** Position from the top side.


S Loading Arm Unit
T Loading Arm Unit
Chassis hole
Slide
Through Holes
Loading Post Base-S Unit
Loading Post Base-T Unit
Through Hole
Main Rod
Line Up
Lift Gear
Intermediate Gear A
Through Hole
Drive Rack Arm
Mechanism and Cassette Up Ass'y
Top View
❈1
❈2
Drive Rack Unit
Line Up
Wiper Arm Unit

Note:
When sliding the Loading Post Base-T Unit as indicated by the arrow, holes on the S & T Loading Arm Unit are Through Holes with hole on chassis. (The hole on T Loading Arm Unit is aligned with the hole on S Loading Arm Unit.)

6.2.4. Grounding Plate Unit, Full Erase Head, and Cylinder Unit

Fig. J2-1

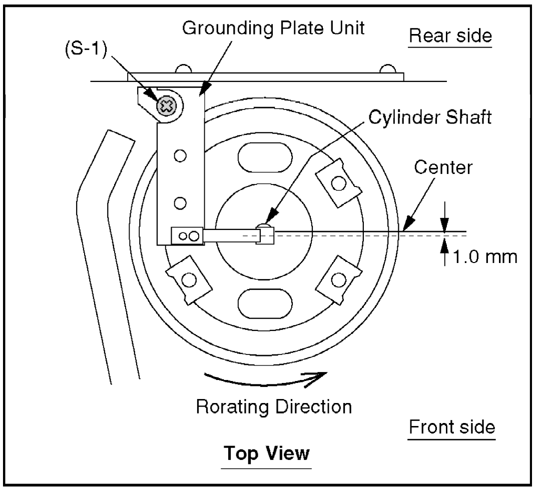

View A
(S-2)
③ Cylinder Unit
P4092
① Grounding Plate Unit
(S-1)
Guide Pins
Audio Control Head Unit
(L-1)
(S-3)
② Full Erase Head
View A
Head Amp C.B.A.
Unsolder
Through Hole
Chassis
P3502
P3503
(S-2)

Note:
Use extreme care when removing or replacing the Cylinder Unit. Do not touch the Video Heads during servicing.

6.2.4.1. Reassembly Notes

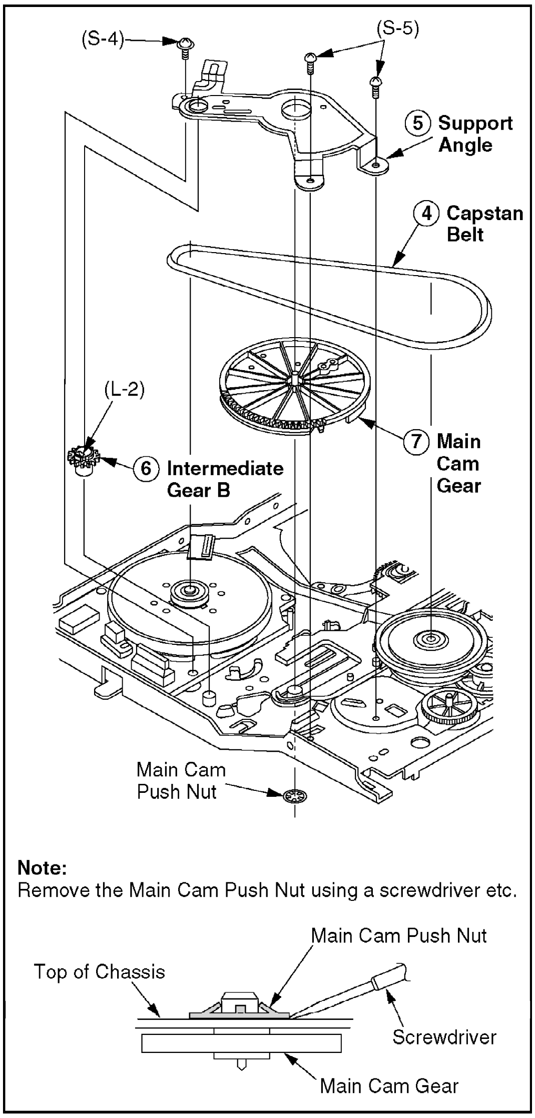
1. **Adjustment of Grounding Plate Unit**
   A. **After installing, make sure that the Grounding Plate Unit, on the top side of mechanism chassis, is positioned on the front side of the Cylinder shaft so that the center line of the plateis just less than 1.0 mm measured from the center of the Cylinder shaft.**
   If required, adjust the plate position by loosening Screw (S-1).
   Never install the Grounding Plate Unit on the rear side of the Cylinder shaft.
   Incorrect positioning will cause cylinder buzz.

Fig. J2-2


Grounding Plate Unit
Rear side
(S-1)
Cylinder Shaft
Center
1.0 mm
Rorating Direction
Front side
Top View

6.2.5. Capstan Belt, Support Angle, Intermediate Gear B, and Main Cam Gear

Fig. J3-1

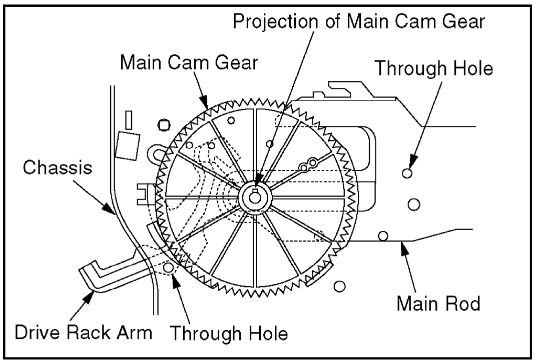

(S-4)
(S-5)
5 Support Angle
4 Capstan Belt
(L-2)
6 Intermediate Gear B
7 Main Cam Gear
Main Cam Push Nut
Main Cam Push Nut
Top of Chassis
Screwdriver
Main Cam Gear

Note:
Remove the Main Cam Push Nut using a screwdriver etc.

6.2.5.1. Reassembly Notes

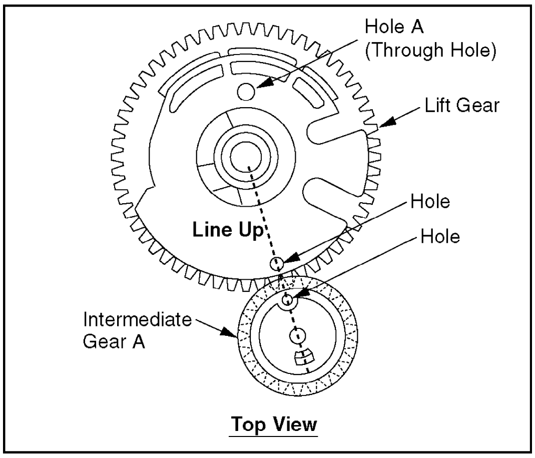
1. **Alignment of Main Cam Gear, Drive Rack Arm, and Main Rod**
   - **A. Confirm that the hole on Main Rod is a Through Hole with a hole on chassis.**
   - **B. Confirm that the hole on Drive Rack Arm is a Through Hole with a hole on chassis.**
   - **C. Install the Main Cam Gear so that the projection of Main Cam Gear is in the upward position as shown.**

Fig. J3-2


Projection of Main Cam Gear
Main Cam Gear
Through Hole
Chassis
Main Rod
Drive Rack Arm
Through Hole

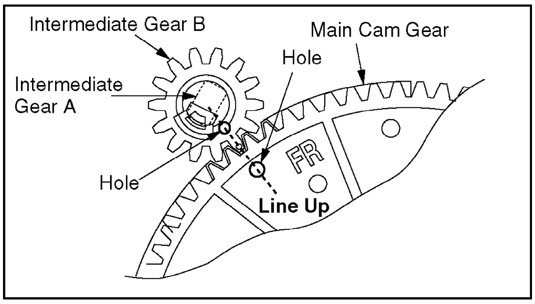
2. **Confirmation/Alignment of Intermediate Gear B, Main Cam Gear, and Intermediate Gear A**
   - **A. Confirm that the Hole A on Lift Gear is a Through Hole with a hole on chassis.**
   - **B. Confirm that the hole on Intermediate Gear A is aligned with the hole on Lift Gear.**

Fig. J3-3


Hole A
(Through Hole)
Lift Gear
Hole
Hole
Line Up
Intermediate Gear A
Top View

   - **C. Install the Intermediate Gear B so that the hole on the Intermediate Gear B is aligned with the hole on the Main Cam Gear.**

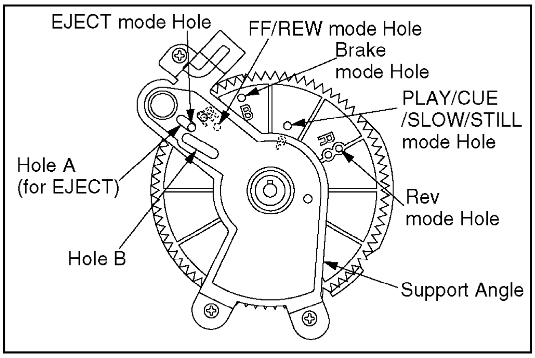
Fig. J3-4


Intermediate Gear B
Main Cam Gear
Hole
Intermediate Gear A
Hole
Line Up
FR

3. Holes on Main Cam Gear

A. The EJECT mode Hole on Main Cam Gear should be a Through Hole with Hole A on Support Angle in EJECT mode. The each mode Hole on Main Cam Gear should be a Through Hole with Hole B on SupportAngle in each mode.

Fig. J3-5


EJECT mode Hole
FF/REW mode Hole
Brake mode Hole
PLAY/CUE /SLOW/STILL mode Hole
Rev mode Hole
Support Angle
Hole A (for EJECT)
Hole B

4. Main Cam Gear Kit

A. Main Cam Gear is supplied as a Main Cam Gear Kit only (Kit No. VVGS0009).

Main Cam Gear Kit consists of a Main Cam Gear and a Main Cam Push Nut.

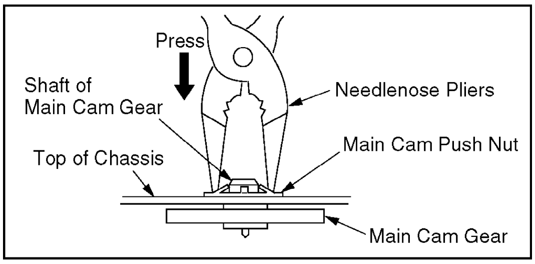
However, Main Cam Push Nut is available separately as a replacement part.

5. Installation of Main Cam Gear and Main Cam Push Nut

A. After installing the Support Angle, install the Main Cam Push Nut with Needlenose Pliers etc. so that it is flush with the chassis.

There may be some slight scratches on the Shaft of Main Cam Gear, when removing the Main Cam Gear. In case that the Main Cam Gear can be installed securely without tottering, it is fine to use the one. If any tottering, installall new parts.

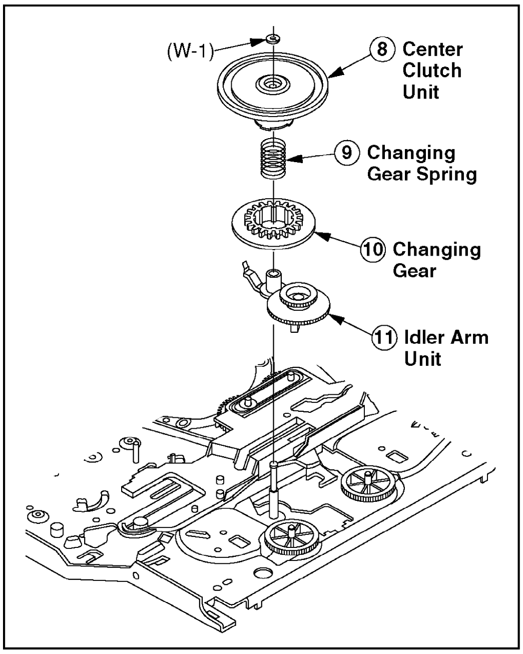
Fig. J3-6


Press
Shaft of Main Cam Gear
Top of Chassis
Needlenose Pliers
Main Cam Push Nut
Main Cam Gear

6. The Main Cam Push Nut is not reusable. Install a new one.

6.2.6. Center Clutch Unit, Changing Gear Spring, Changing Gear, and Idler Arm Unit

Fig. J4-1

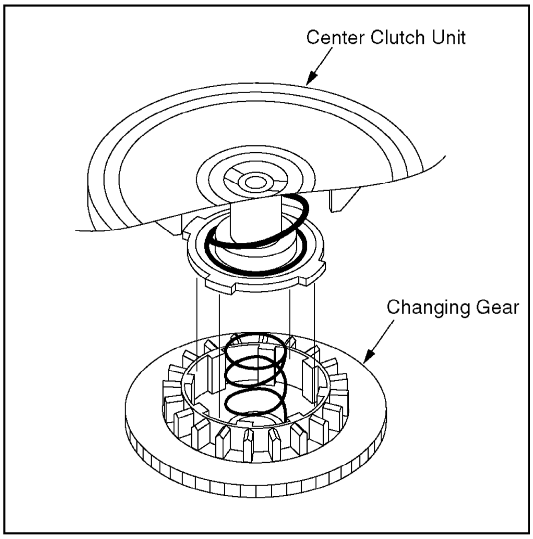

(W-1)
8 Center Clutch Unit
9 Changing Gear Spring
10 Changing Gear
11 Idler Arm Unit

6.2.6.1. Reassembly Notes

1. Installation of Center Clutch Unit

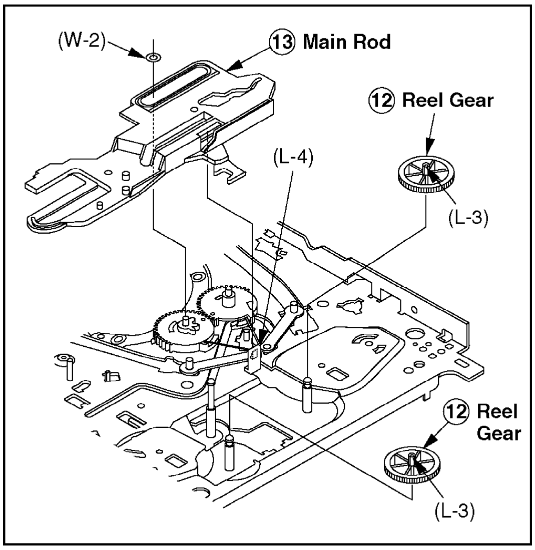
A. Fit the Center Clutch Unit into the Changing Gear.

Fig. J4-2


Center Clutch Unit
Changing Gear

6.2.7. Reel Gear and Main Rod

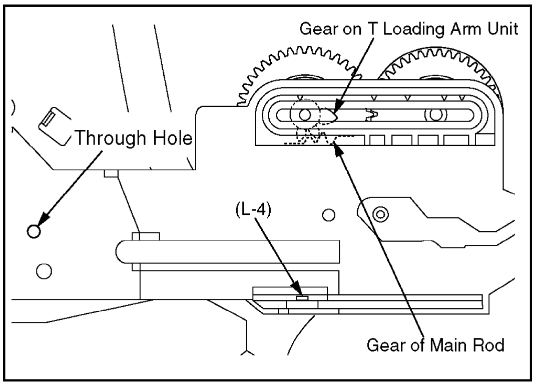
Fig. J5-1


(W-2)
⑬ Main Rod
⑫ Reel Gear
(L-4)
(L-3)
⑫ Reel Gear
(L-3)

6.2.7.1. Reassembly Notes

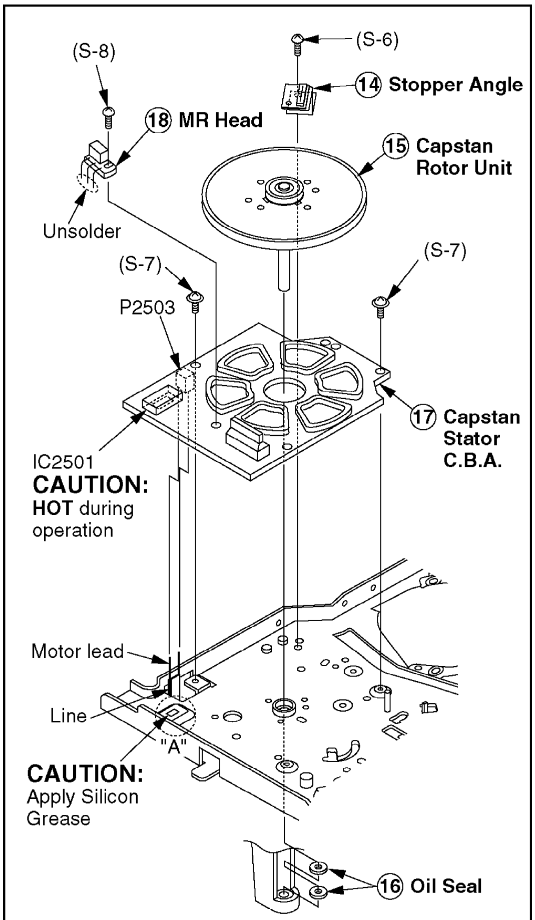
1. **Alignment of Main Rod and T Loading Arm Unit**
   A. Align the Gear of T Loading Arm Unit with Gear of Main Rod. Confirm that the Hole on Main Rod is a Through Hole with a hole on chassis.

Fig. J5-2


Gear on T Loading Arm Unit
Through Hole
(L-4)
Gear of Main Rod

6.2.8. Stopper Angle, Capstan Rotor Unit, Oil Seal, Capstan Stator C.B.A., and MR Head

Fig. J6-1


(S-8)
(S-6)
⑭ Stopper Angle
⑱ MR Head
⑮ Capstan Rotor Unit
Unsolder
(S-7)
(S-7)
P2503
⑰ Capstan Stator C.B.A.
IC2501
CAUTION:
HOT during operation
Motor lead
Line
"A"
CAUTION:
Apply Silicon Grease
⑯ Oil Seal

CAUTION:
When removing the Capstan Stator C.B.A., avoid touching IC2501 on the Capstan Stator C.B.A. because it is **HOT** during operation.

6.2.8.1. Reassembly Notes

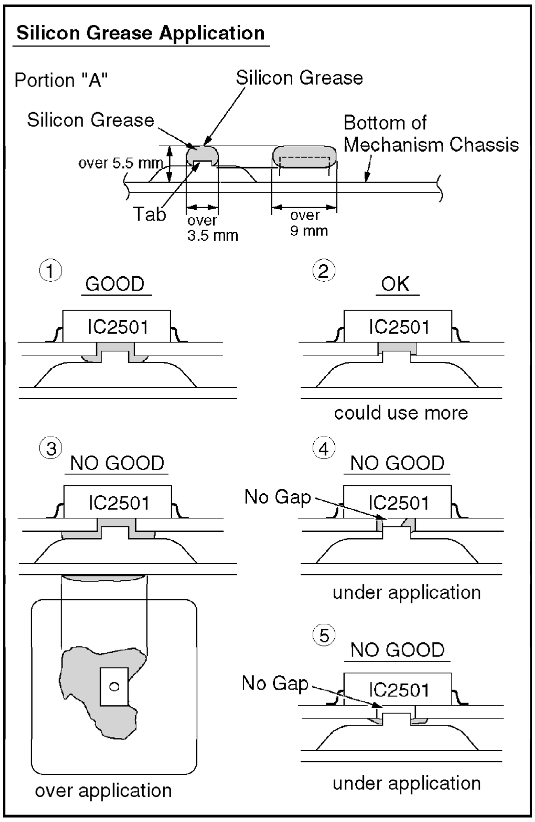
1. Application of Silicon Grease

CAUTION:

When installing the IC2501 (AN3845SC) or Capstan Stator C.B.A.,

be sure to apply Silicon Grease (VFK1301) as shown. Be careful not to touch other parts with greased portion to prevent grease depletion.

Fig. J6-2

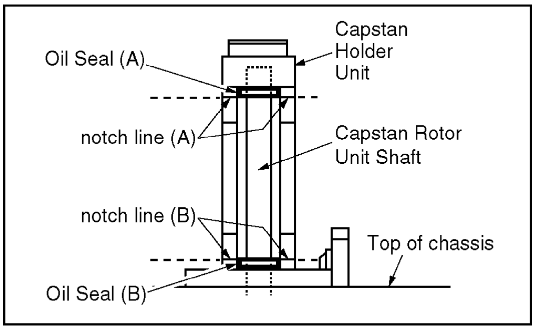

Silicon Grease Application
Portion "A"
Silicon Grease
Silicon Grease
Bottom of Mechanism Chassis
over 5.5 mm
Tab
over 3.5 mm
over 9 mm
① GOOD
IC2501
② OK
IC2501
could use more
③ NO GOOD
IC2501
over application
④ NO GOOD
No Gap
IC2501
under application
⑤ NO GOOD
No Gap
IC2501
under application

2. Installation of Capstan Rotor Unit and Oil Seal

A. Install the 2 Oil Seals into the Capstan Holder Unit. Then, insert the Capstan Rotor Unit Shaft into the hole of the Capstan Holder Unit so that shaft passes through 2 Oil Seals. Be carefulnot to scratch the Shaft or Capstan Holder Unit.

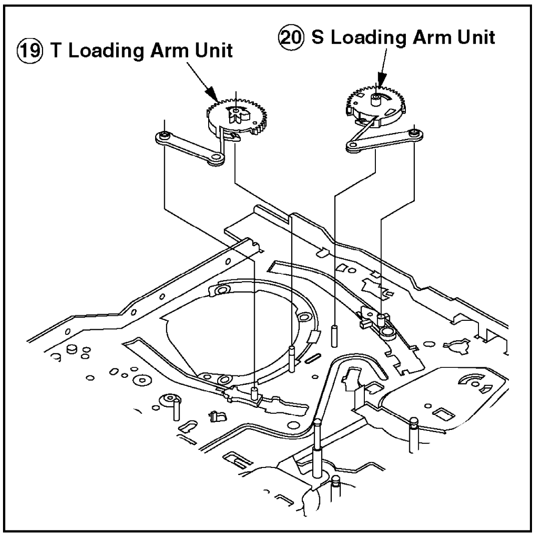
B. Align the bottom of Oil Seal (A) with notch line (A). Align the top of Oil Seal (B) with notch line (B).

Fig. J6-3


Oil Seal (A)
Capstan Holder Unit
notch line (A)
Capstan Rotor Unit Shaft
notch line (B)
Top of chassis
Oil Seal (B)

6.2.9. T Loading Arm Unit and S Loading Arm Unit

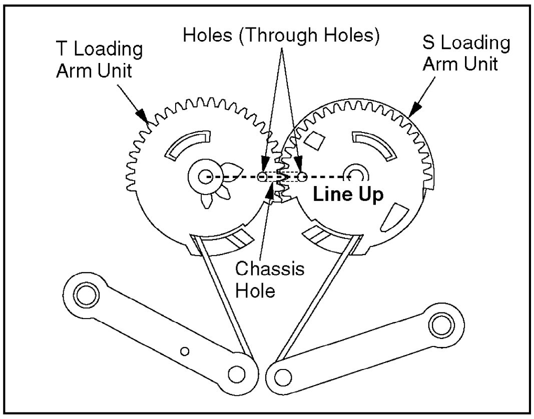
Fig. J7-1


⑲ T Loading Arm Unit
⑳ S Loading Arm Unit

6.2.9.1. Reassembly Notes

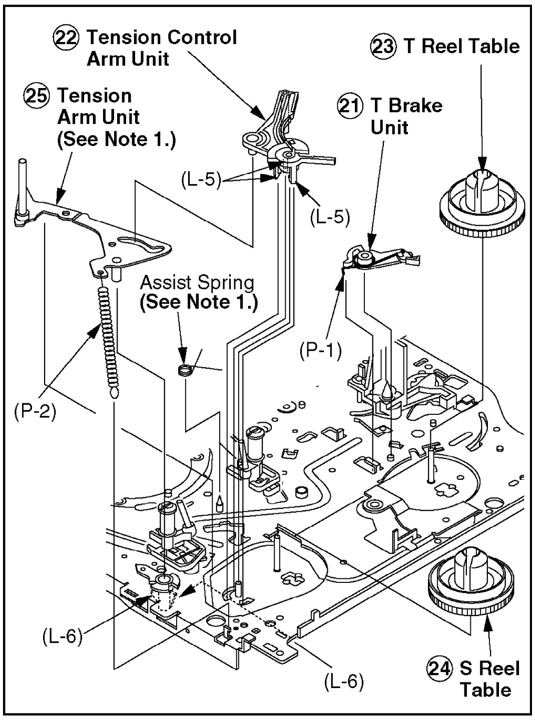
1. **Alignment of T Loading Arm Unit and S Loading Arm Unit**
    - **A. Install the S Loading Arm Unit onto the chassis.**
    - **B. Install the T Loading Arm Unit so that the hole on T Loading Arm Unit is aligned with the hole on S Loading Arm Unit.**
    - **C. Confirm that the holes on the S& T Loading Arm Unit are Through Holes with hole on chassis.**

Fig. J7-2


T Loading
Arm Unit
Holes (Through Holes)
S Loading
Arm Unit
Line Up
Chassis
Hole

6.2.10. T Brake Unit, Tension Control Arm Unit, T Reel Table, S Reel Table, and Tension Arm Unit

Fig. J8-1


㉒ Tension Control Arm Unit
㉓ T Reel Table
㉕ Tension Arm Unit (See Note 1.)
㉑ T Brake Unit
(L-5)
(L-5)
Assist Spring (See Note 1.)
(P-1)
(P-2)
(L-6)
(L-6)
㉔ S Reel Table

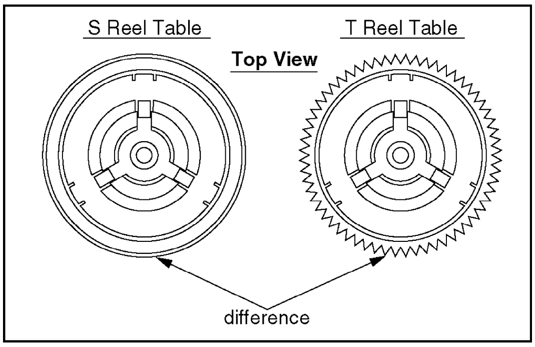
Note:

**1. Only For early products; the Assist Spring is used.
When servicing the Assist Spring or the Tension Arm Unit, replace only the Tension Arm Unit with a new one and remove the Assist Spring.**

6.2.10.1. Reassembly Notes

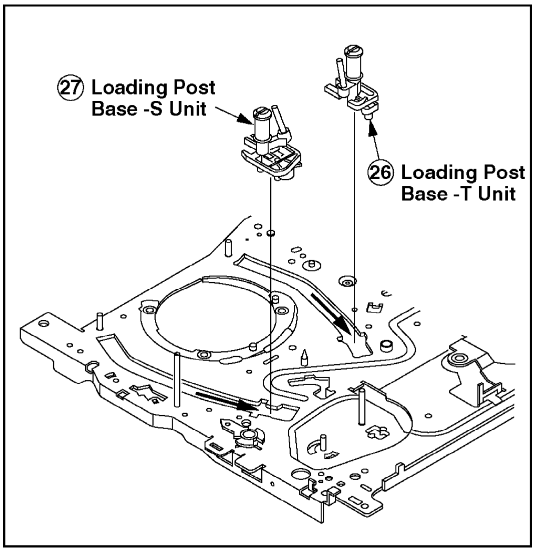
1. How to distinguish between S Reel Table and T Reel Table

Fig. J8-2


S Reel Table
T Reel Table
Top View
difference

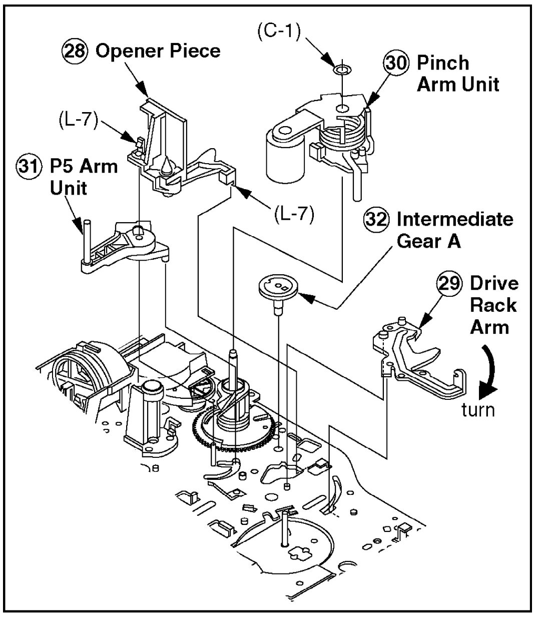
6.2.11. Loading Post Base -T Unit and Loading Post Base -S Unit

Fig. J9


㉗ Loading Post Base -S Unit
㉖ Loading Post Base -T Unit

6.2.12. Opener Piece, Drive Rack Arm, Pinch Arm Unit, P5 Arm Unit, and Intermediate Gear A

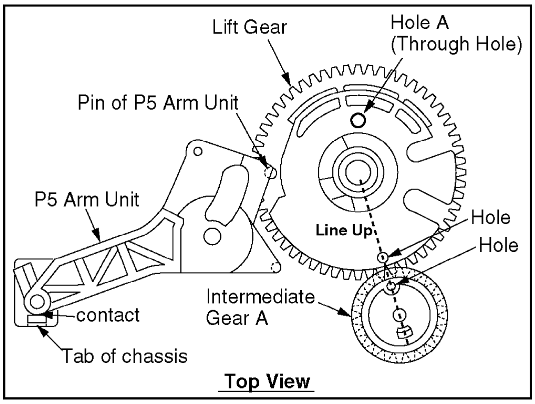
Fig. J10-1


㉘ Opener Piece
(C-1)
㉚ Pinch Arm Unit
(L-7)
㉛ P5 Arm Unit
(L-7)
㉜ Intermediate Gear A
㉙ Drive Rack Arm
turn

6.2.12.1. Reassembly Notes

1. **Installation/Alignment of Intermediate Gear A, Lift Gear and P5 Arm Unit**
   - **A. Rotate the Lift Gear so that Hole A on Lift Gear is a Through Hole with a hole on chassis.**
   - **B. Install the Intermediate Gear A so that the hole on Intermediate Gear A is aligned with the hole on Lift Gear.**
   - **C. Install the P5 Arm Unit so that it contacts with the tab of chassis.**

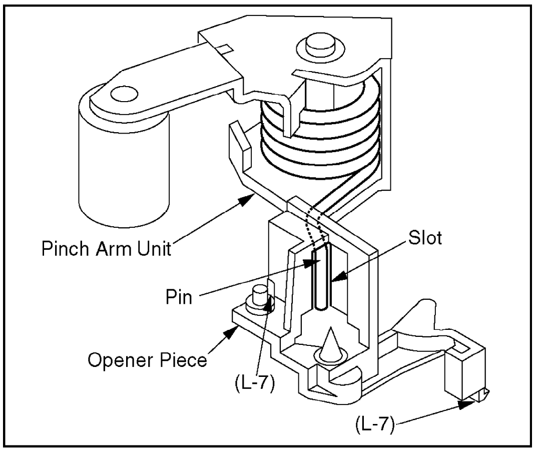
Fig. J10-2


Lift Gear
Hole A
(Through Hole)
Pin of P5 Arm Unit
P5 Arm Unit
Line Up
Hole
Hole
contact
Intermediate
Gear A
Tab of chassis
Top View

2. Installation of Opener Piece

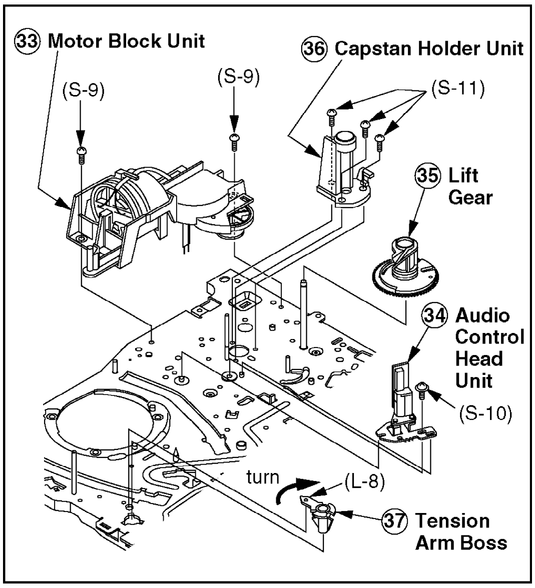
A. Install the Opener Piece so that the slot of the Opener Piece is inserted to the Pin of Pinch Arm Unit

Fig. J10-3


Pinch Arm Unit
Slot
Pin
Opener Piece
(L-7)
(L-7)

6.2.13. Motor Block Unit, Audio Control Head Unit, Lift Gear, Capstan Holder Unit, and Tension Arm Boss

Fig. J11



6.3. CASSETTE UP ASS'Y SECTION

This chart indicates Step/Location No. of Parts to be serviced and prior steps to gain access items to be serviced when disassembling.
When reassembling, perform the step(s) in the reverse order.

Step/Loc. No.	Prior Step(s)	Part	Fig. No.	Remove	Alignment/Adjustment
①	------------	Top Plate	K1-1	(L-1), (L-2)	
②	1	Wiper Arm Unit	K1-1	2(L-3)	Gear Alignment
③	1,2	Holder Unit	K1-1	-	
④	------------	Opener Lever	K2	2(L-4)	
⑤	1,2,3,4	Drive Rack Unit	K2	-	

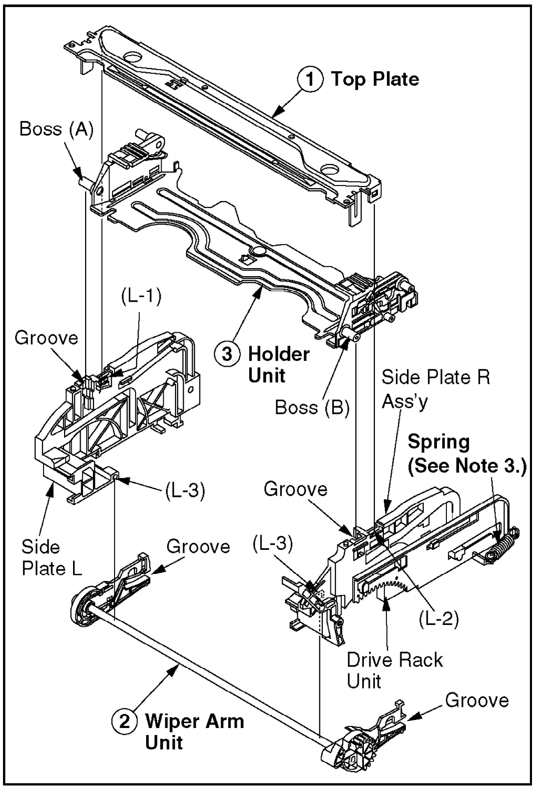
A B C D E F

How to read chart shown above:

A: Order of Procedure steps.
When reassembling, perform steps(s) in reverse order.
These numbers are also used as the identification (location) No. of parts in Figures.
B: Steps to be completed prior to the current step.
C: Part to be removed or installed.
D: Fig. No. showing Procedure or Part Location.
E: Identification of part to be removed, unhooked, unlocked, released, unplugged or unsoldered.
(S-1) = Screw (S-1), (L-1) = Locking Tab (L-1),
(W-1) = Washer (W-1), (P-1) = Spring (P-1),
(C-1) = Cut Washer (C-1)
F: Alignment/Adjustment which is required when installing or replacing each Parts.

6.3.1. Top Plate, Wiper Arm Unit, and Holder Unit

Fig. K1-1


① Top Plate
Boss (A)
(L-1)
Groove
③ Holder Unit
Boss (B)
Side Plate R Ass'y
Spring (See Note 3.)
(L-3)
Groove
Side Plate L
Groove
(L-3)
(L-2)
Drive Rack Unit
Groove
② Wiper Arm Unit

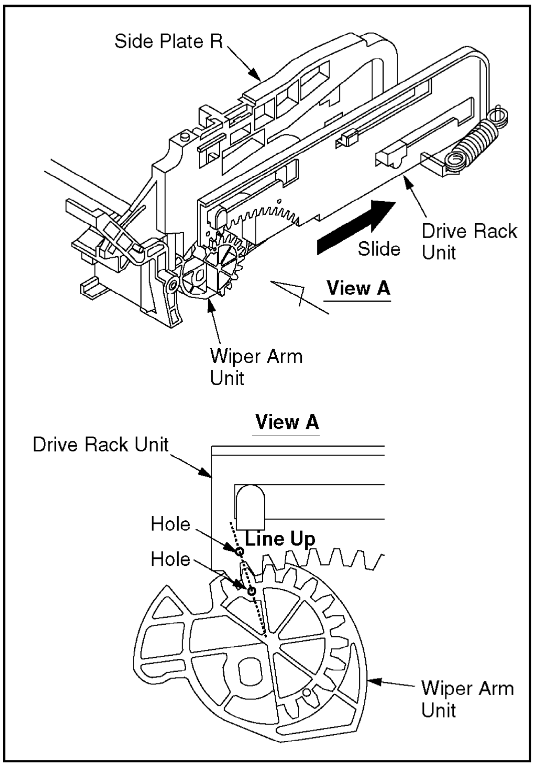
6.3.1.1. Reassembly Notes

1. Alignment of Wiper Arm Unit and Drive Rack Unit

  A. Slide the Drive Rack Unit to the far right as indicated by the arrow.

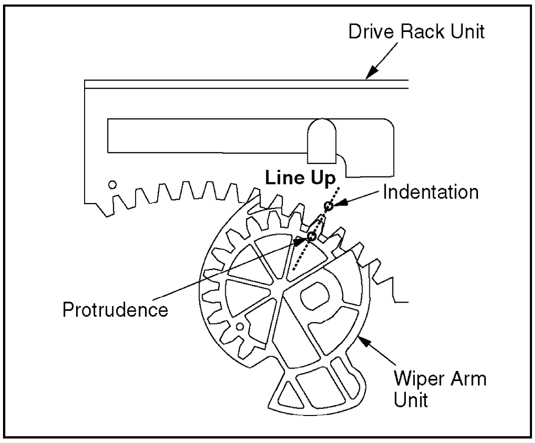
  B. Install the Wiper Arm Unit so that the hole on the Wiper Arm Unit is aligned with the hole on the Drive Rack Unit.

Fig. K1-2


Side Plate R
Drive Rack Unit
Slide
View A
Wiper Arm Unit
View A
Drive Rack Unit
Hole
Line Up
Hole
Wiper Arm Unit

2. **Installation of Holder Unit**
   - A. Turn the Wiper Arm Unit so that the grooves on each end are aligned with the each groove on Side Plate L and R.
   - B. Insert Holder Unit boss (A) and (B) into the grooves as shown in Fig. K1-1.
   - C. Finally, in the EJECTPosition, confirm that the protrudence on the Wiper Arm Unit is aligned with the indentation on the Drive Rack Unit.

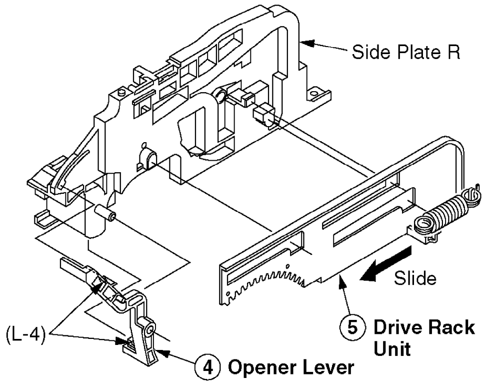
Fig. K1-3


Drive Rack Unit
Line Up
Indentation
Protrudence
Wiper Arm Unit

3. **Make sure to hook the spring to the Drive Rack Arm of Mechanism chassis.**

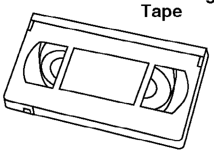
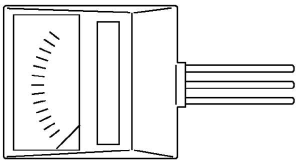
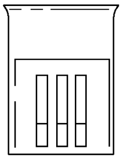
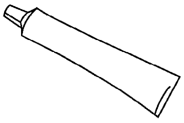
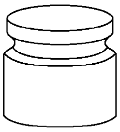
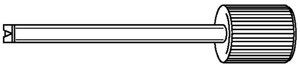
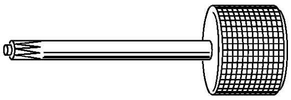
6.3.2. Opener Lever and Drive Rack Unit

Fig. K2



7. ADJUSTMENT PROCEDURES

7.1. SERVICE FIXTURES AND TOOLS

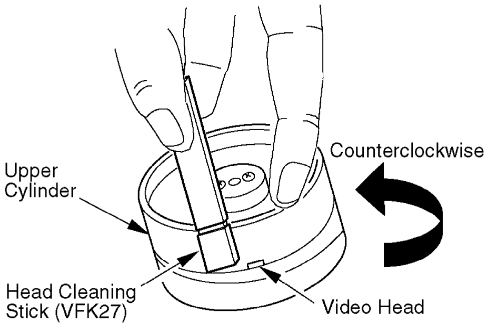
VFMS0003H6 **VHS Alignment Tape**  Video: Color Bar & Monoscope Audio: 6kHz(MONO)	**Back Tension Meter (Made in USA., Purchase Locally)** 	**VFK27** **Head Cleaning Stick** 
VFK1301 **Silicon Grease** 	**VFKS0081** **Grease** 	**VFK0329** **Post Adjustment Driver** 
VFK0330 **H-Position Adjustment Driver** 		

7.2. MECHANICAL ADJUSTMENT

7.2.1. CLEANING PROCEDURE FOR THE UPPER CYLINDER UNIT

1. **While slowly turning the Upper Cylinder Unit counterclockwise by hand, gently rub the Video Heads with a Head Cleaning Stick (VFK27) moistened with Ethanol.**
   When using a Cleaning Cassette, make sure to use "DRY" type only and be aware that excessive use can shorten head life.

Fig. M1



Note:

A. Do not rub vertically or apply excess pressure to the Video Heads.
Do not turn the Upper Cylinder Unit clockwise while cleaning.

B. After cleaning, use a Dry Head Cleaning Stick (VFK27) to remove any Ethanol remaining on the cylinder tape path. Otherwise, tape damage will occur.

7.2.2. ADJUSTMENT PROCEDURES

7.2.2.1. BACK TENSION CONFIRMATION

Purpose:

To fine adjust the Back Tension so that the tape runs smoothly with a constant tension.

Symptom of Misadjustment:

1) If the tape tension is less than the specified value, the tape cannot come into proper contact with the Video Heads, resulting in poor picture playback.

2) If the tape tension is too high, the tape will soon be damaged.

Equipment Required:

Back Tension Meter (Made in U.S.A., Purchase Locally)
VHS Cassette Tape (120-Minute Tape)

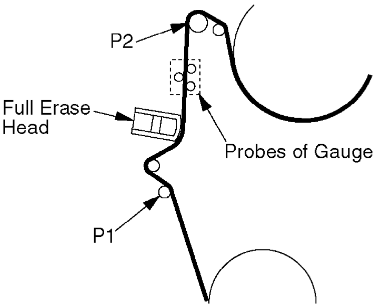
Specification:

20 gf±2.5 gf
(0.196 N±0.025 N)

1. Play back a T120 cassette tape from the beginning for approx. 10 to 20 seconds to stabilize tape movement.

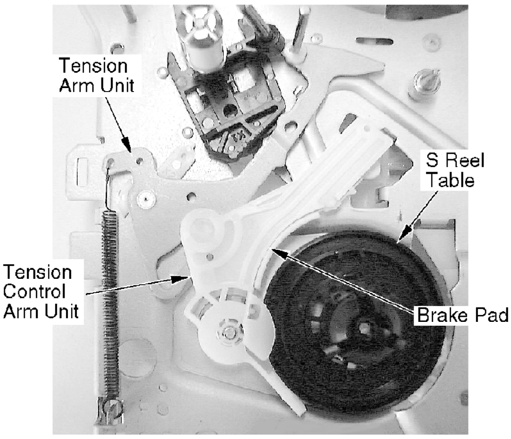
2. Insert a Tension Meter into tape path and measure the back tension.

Fig. M2-1


P2
Full Erase Head
Probes of Gauge
P1

3. If the reading is out of specification, make sure that there is no dust or foreign material between the Brake Pad of Tension Control Arm Unit and the S Reel Table.
   After cleaning, the reading of tension measurement is still out of specification, replace the Tension Arm Unit and the Tension Control Arm Unit.

Fig. M2-2


Tension Arm Unit
S Reel Table
Tension Control Arm Unit
Brake Pad

Note:

A. Be sure that the three probes of the meter are all in solid contact with the tape, but not touching any other parts of the mechanism.

B. It is recommended that measurements should be repeated at least three (3) times because the tension meter is very sensitive to external vibrations.

7.2.2.2. MR HEAD GAP ADJUSTMENT

Purpose:

To properly pick up the FG Signal.

Symptom of Misadjustment:

If the FG Signal is not properly picked up, Servo Operation cannot

be achieved.

Equipment Required:

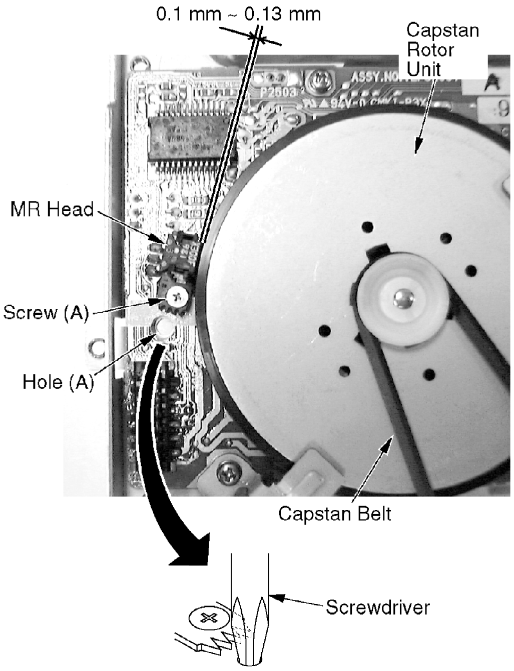
Oscilloscope

Specification:

0.1 mm ~ 0.13 mm

1. **Remove the VCR Chassis Unit and then place it upside down.**
2. **Remove the TV/VCR Main C.B.A.**
3. **Slightly loosen Screw (A). Then set the Screwdriver (Phillips Driver) into the Hole (A). Turn the screwdriver clockwise until the MR Head touches the rotor. Then turn it slightly counterclockwise to make theclearance as specified.**
4. **Tighten Screw (A).**
5. **Reinstall the TV/VCR Main C.B.A.**

Fig. M3-1



Note:

Do not touch the outside circumference of the rotor surface with any tool and keep magnetic material away from the rotor magnet (especially metal particles).

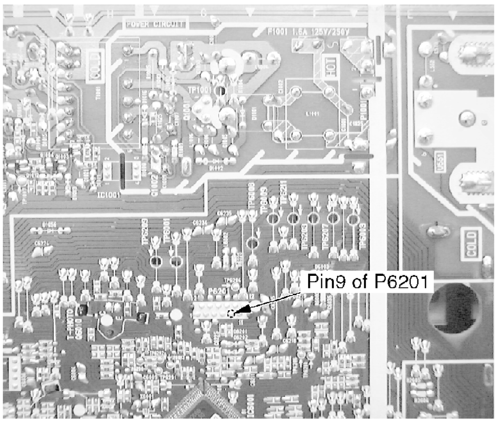
Confirmation of Signal Level

1. **Place the unit in Service Position (2). Refer to "SERVICE POSITION**

" in SERVICE NOTES.

2. Supply a Video Signal to the video input jack.
3. Insert a cassette tape and place the unit in SLP recording mode.
4. Connect the oscilloscope to Pin 9 of P6201 on the TV/VCR Main C.B.A. Confirm that the signal level is greater than 20 mV [P-P].

Fig. M3-2



TV/VCR Main C.B.A. (foil side)

7.2.2.3. TAPE INTERCHANGEABILITY ADJUSTMENT

Note:

To perform these adjustment/confirmation procedures, set the tracking to the neutral position.

Equipment Required:

Dual Trace Oscilloscope
VHS Alignment Tape (VFMS0003H6)
Post Adjustment Driver (VFK0329)
H-Position Adjustment Driver (VFK0330)

7.2.2.3.1. ENVELOPE OUTPUT ADJUSTMENT

The height of the P2 and P3 Posts replacement part is preadjust at the factory.

Purpose:

To achieve a satisfactory picture and secure precise tracking.

Symptom of Misadjustment:

If the envelope is output poorly, much noise will appear in the picture. Then the tracking will lose precision and the playback picture will be distorted by any slight variation of the tracking control circuit.

Equipment Required:

Post Adjustment Driver (VFK0329)

1. **Place a jumper between TP6003 and+5V(TP6009) on the TV/VCR Main C.B.A. to defeat Auto Tracking.**
2. **Eject the tape and insert it again to access the Neutral Tracking position.**
3. **Play back the alignment tape.**
4. **Connect the oscilloscope to TP3002 on the Video Signal Process Section of the TV/VCR Main C.B.A. Use TP6205 as a trigger.**
5. **Confirm that the RF envelope is flat enough (V1/V-max. is 0.7 or more). If not, with Post Adjustment Driver, adjust P2 and P3 post height so that the envelope waveform becomes as flat (V1/V-max.is 0.7 or more) as possible (No envelope drop). If the envelope drop appears on the left-half of the waveform, adjust P2 post height. If the envelope drop appears on the right-half of the waveform, adjust P3 post height.**

   CAUTION:

   Overtightening P2 and P3 posts may cause the threads to strip.

   Note:

   It will be possible to confirm Step 5 according to following steps.

   A. Press the Tracking Control Up or Down button on remote control. Make sure that the envelope waveform remains flat. If not, readjust P2 and/or P3 post heights.

Fig. M4-1

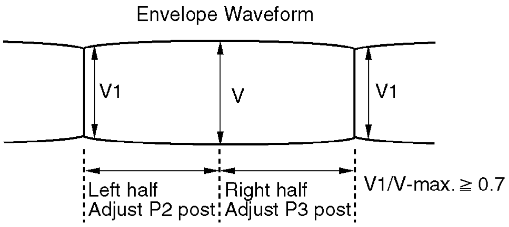
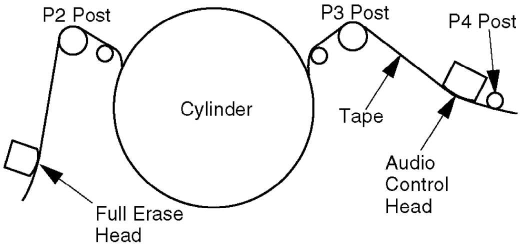

Envelope Waveform
V1
V
V1
Left half
Adjust P2 post
Right half
Adjust P3 post
V1/V-max. ≧ 0.7

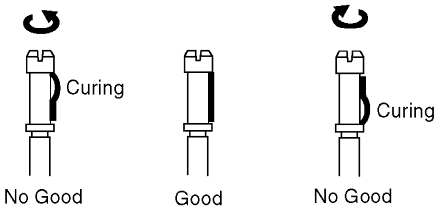
Fig. M4-2


P2 Post
P3 Post
P4 Post
Cylinder
Tape
Audio Control Head
Full Erase Head

6. **After adjustment, confirm that the tape travels without curling at**

P2 and P3 posts.

Fig. M4-3


Curing
Curing
No Good
Good
No Good

7. Remove the jumper after completing the adjustment procedure.

7.2.2.3.2. AUDIO CONTROL HEAD TILT ADJUSTMENT

Purpose:

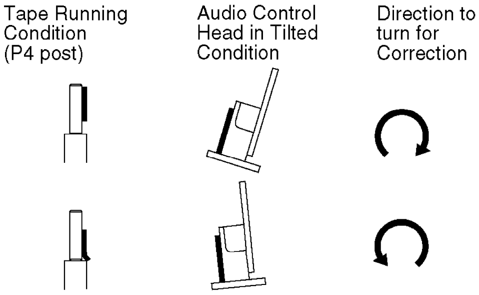
To confirm that the tape runs smoothly. In particular, confirm that the tape properly picks up the Audio Signal at the upper part of the head and the Control Signal at the lower part of the head.

Symptom of Misadjustment:

If the tilt of the Audio Control Head is poorly adjusted, the tape will eventually be damaged. An intermittent Blue screen may be seen in Playback.

1. **Play back a T120 cassette tape and check that the tape travels smoothly between the upper and lower guides of the P4 post.**
2. **If necessary, adjust Black Screw (B) clockwise until the tape begins to curl at the lower edge of the P4 post. Then adjust the screw counterclockwise until the curling is eliminated.**

Fig. M5


Tape Running Condition (P4 post)
Audio Control Head in Tilted Condition
Direction to turn for Correction

7.2.2.3.3. AUDIO CONTROL HEAD HEIGHT ADJUSTMENT

The height of the Audio Control Head replacement part is preset at the factory.

Purpose:

To be sure the tape runs properly along the Control Head.

Symptom of Misadjustment:

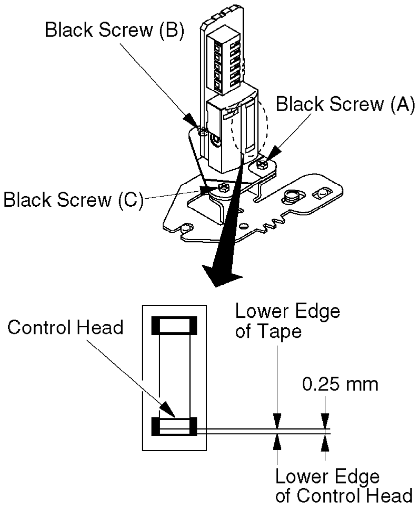
If the control signal is not properly picked up, Servo Operation

cannot be achieved. A Blue screen will be seen in Playback.

This confirmation is required when the Audio Control Head is replaced.

1. **Play back a T120 cassette tape and check that the lower edge of the tape runs approximately 0.25 mm above the lower edge of the Audio Control Head.**
2. **If necessary, adjust Black Screws (A) and (B) clockwise to lower the tape or counterclockwise to raise.**

Fig. M6


Black Screw (B)
Black Screw (A)
Black Screw (C)
Control Head
Lower Edge of Tape
0.25 mm
Lower Edge of Control Head

7.2.2.3.4. AUDIO CONTROL HEAD AZIMUTH ADJUSTMENT

Purpose:

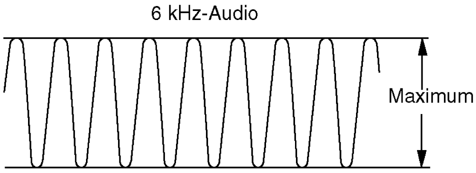
To adjust the position and height of the Audio Control Head so that it meets the tape tracks properly.

Symptom of Misadjustment:

If the position of the Audio Control Head is not properly adjusted, the Audio S/N Ratio is poor.

1. **Connect the oscilloscope to the TP4002 on the TV/VCR Main C.B.A.**
2. **Play back the 6 kHz Monaural Audio portion of the alignment tape.**
3. **Adjust Black Screw (C) on the Audio Control Head base so that the output level is at maximum.**

Fig. M7



4. **Confirm the height of the Audio Control Head is proper. If not, readjust Black Screws (A) and (B).**

7.2.2.3.5. AUDIO CONTROL HEAD HORIZONTAL POSITION ADJUSTMENT

Purpose:

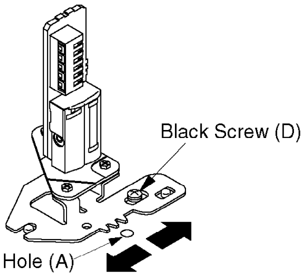
To adjust the Horizontal Position of the Audio Control Head.

Symptom of Misadjustment:

If the Horizontal Position of the Audio Control Head is not properly adjusted, a maximum envelope cannot be obtained at the Neutral Position of the Tracking Control Circuit.

1. **Place a jumper between TP6003 and+5V(TP6009) on the TV/VCR Main C.B.A. to defeat Auto Tracking.**
2. **Eject the tape and insert it again to access the Neutral Tracking position.**
3. **Play back the alignment tape.**
4. **Connect the oscilloscope to TP3002 on the Video Signal Process Section of the TV/VCR Main C.B.A. Use TP6205 as a trigger.**
5. **Loosen the Black Screw (D) and tighten it slightly. Set the H-Position Adjustment Driver into the Hole (A). Then slowly turn the fixture either clockwise or counterclockwise so that the envelope is at maximum.**

Fig. M8



6. **Tighten Black Screw (D).**
7. **Remove the jumper between TP6003 and+5V(TP6009).**

Note:

Old type of H-Position Adjustment Driver (VFK0136) can be used for this adjustment.

7.3. ELECTRICAL ADJUSTMENT

NOTE:

Following Adjustments have been preadjusted at factory and are not required.

- **Purity Adjustment**
- **Static Central Convergence Adjustment**
- **Dynamic Convergence Adjustment**

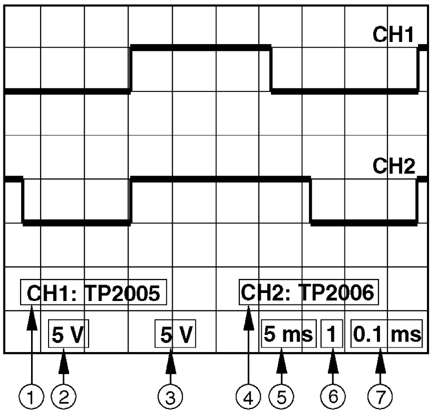
7.3.1. TEST EQUIPMENT

To do all of these electrical adjustments, the following equipment is required.

1. **Dual-Trace Oscilloscope**
   Voltage Range: 0.001 V to 50 V/Div.
   Frequency Range: DC to 50 MHz
   Probes: 10:1, 1:1
2. **NTSC Video Pattern Generator**
3. **DVM (Digital Volt Meter)**
4. **MTS/SAP Signal Generator**
   (TV Multi-Channel Sound Modulator (U.S.A.))
5. **Frequency Counter**
   Frequency Range: 0 to 150 MHz
6. **Plastic Tip Driver and Non-Metal Driver**
7. **Isolation Transformer (Variable)**
8. **VHS Alignment Tape (VFMS0003H6)**
9. **Degaussing Coil**
10. **White Pattern Generator**
11. **Audio Generator**

7.3.2. HOW TO READ THE ADJUSTMENT PROCEDURES

Fig. E1



1. Connecting Point
3. Volts/DIV
5. Time/DIV
7. Time/DIV for Delay

2. Volts/DIV
4. Connecting Point
6. Trigger Channel of the Scope
   1 : CH1
   2 : CH2

7.3.3. STEREO/SAP SEPARATION ADJUSTMENT

Purpose:

To separate the L and R Channels of Stereo Signal.

Symptom of Misadjustment:

The L and R Channels of Stereo Signal will not be separated properly resulting in no stereophonic effect.

Test Point:

TP9001, TP9101 (Audio C.B.A.)

Adjustment:

R9001, R9008, R9101, R9108 (Audio C.B.A.)

Specification:

minimum level

INPUT:

Antenna Input Terminal
MTS (ONLY L CH)
300 Hz±5 Hz, 3 kHz±5 Hz
14% or 7% Modulating

Mode:

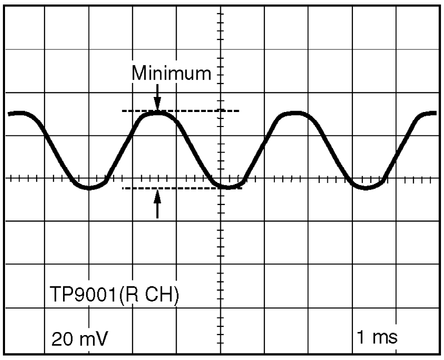
STEREO audio (TV)

Equipment:

Oscilloscope,
MTS/SAP Signal Generator

1. **Set to TV mode, and then set to STEREO audio.**
2. **Connect the RF OUTPUT of the MTS/SAP Signal Generator to the Antenna Input Terminal.**
   Then, set the MTS/SAP Signal Generator as follows.
   MTS (ONLY L CH)
   300 Hz±5 Hz
   14% or 7% Modulating
3. **Connect the Oscilloscope to TP9001 on the Audio C.B.A.**
4. **Adjust R9001 (SEP (L)) on the Audio C.B.A. so that the signal level of TP9001 is minimum.**
5. **Set the MTS/SAP Signal Generator as follows.**
   MTS (ONLY L CH)
   3 kHz±5 Hz
   14% or 7% Modulating
6. **Adjust R9008 (SEP (H)) on the Audio C.B.A. so that the signal level of TP9001 is minimum.**

Fig. E2-1

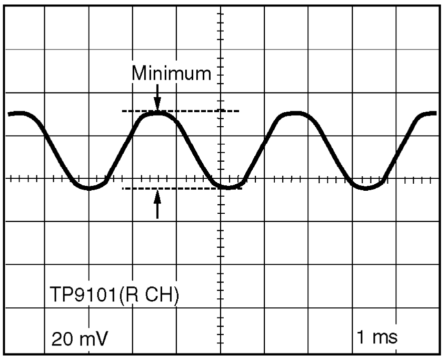


7. **Set the MTS/SAP Signal Generator as follows.**
   MTS (ONLY L CH)
   300 Hz±5 Hz
   14% or 7% Modulating
8. **Connect the Oscilloscope to TP9101 on the Audio C.B.A.**
9. **Adjust R9101 (SEP (L)) on the Audio C.B.A. so that the signal level of TP9101 is minimum.**
10. **Set the MTS/SAP Signal Generator as follows.**
    MTS (ONLY L CH)

3 kHz±5 Hz
14% or 7% Modulating

11. Adjust R9108 (SEP (H)) on the Audio C.B.A. so that the signal level of TP9101 is minimum.

Fig. E2-2



7.3.4. SEPARATION ADJUSTMENT

Note:

Be sure to perform this adjustment after STEREO/SAP SEPARATION ADJUSTMENT are completed.

Purpose:

To separate the L and R Channels of Stereo Signal.

Symptom of Misadjustment:

The L and R Channels of Stereo Signal will not be separated properly resulting in no stereophonic effect.

Test Point:

TP9001, TP9101 (Audio C.B.A.)

Adjustment:

R9003, R9103 (Audio C.B.A.)

Specification:

minimum level

INPUT:

Antenna Input Terminal
MTS (ONLY L CH)
300 Hz±5 Hz
14% or 7% Modulating

Mode:

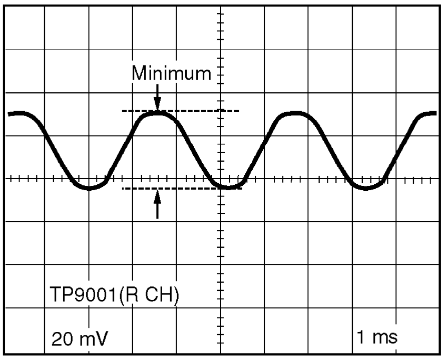
STEREO audio (TV)

Equipment:

Oscilloscope, MTS/SAP Signal Generator

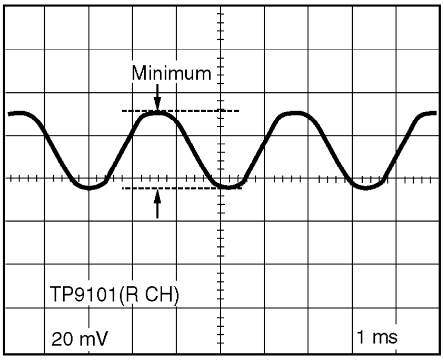
1. **Connect the RF OUTPUT of the MTS/SAP Signal Generator to the Antenna Input Terminal.**
2. **Connect the Oscilloscope to TP9001 on the Audio C.B.A.**
3. **Set to TV mode, and then set to STEREO audio.**
4. **Adjust R9003 on the Audio C.B.A. so that the signal level is minimum.**

Fig. E3-1



5. **Connect the Oscilloscope to TP9101 on the Audio C.B.A.**
6. **Adjust R9103 on the Audio C.B.A. so that the signal level is minimum.**

Fig. E3-2



7.3.5. FM VCO ADJUSTMENT

Purpose:

To set VCO free run frequency.

Symptom of Misadjustment:

Even when stereophony is received, only monaural sound will be output.

Test Point:

Pin 25 of P4203, TP9201 (Audio C.B.A.)

Adjustment:

R9205 (Audio C.B.A.)

Specification:

38.0 kHz±50 Hz

Input:

Mode:

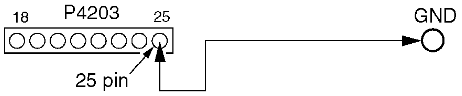
STEREO audio (FM Radio)

Equipment:

Frequency Counter

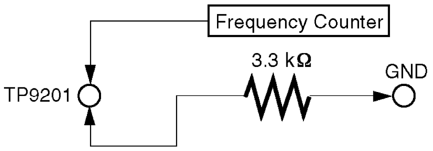
1. Connect Pin 25 of P4203 on Audio C.B.A. to GND.

Fig. E4-1



2. Connect TP9201 on Audio C.B.A. to GND through a resistor (3.3 k Ω). Then, connect Frequency Counter to TP9201.

Fig. E4-2



3. Adjust R9206 (FM VCO) so that the frequency is 38.0 kHz±50 Hz.

7.3.6. EVR (Electronic Variable Register) ADJUSTMENT WITH THE REMOTE CONTROL

This unit has electronic technology using I2C Bus concept.
The following control functions are adjusted by using "On Screen Displays" and the remote control instead of adjusting mechanical controls (VR).

Control functions	❈ 2 Address	Range	Default
SUB COLOR	00	C0 — FF, 00 — 3F	**00**
SUB TINT	01	E0 — FF, 00 — 1F	**00**
SUB BRIGHT	02	C0 — FF, 00 — 3F	**F0**
CONTRAST	03	C1 — FF, 00	00
SUB SHARPNESS	04	E0 — FF, 00 — 1F	F0
R CUT -OFF	05	00 — 7F	**1E**
G CUT -OFF	06	00 — FD	**3C**
B CUT -OFF	07	00 — FD	**3C**
G DRIVE	08	00 — 7F	**40**
B DRIVE	09	00 — 7F	**40**
SUB CONTRAST	0A	00 — 0F	**06**
H CENTER	0B	00 — 0F	**08**
SUB V	0C	00 — 03	00
V SIZE	0D	00 — 7F	**40**
V POSITION	0E	00 — 7F	**40**
ANR CTL	10	00 — EF	89
PICTURE CTL	11	00 — EF	86
VV COLOR ❈ 1	12	C0 — FF, 00 — 3F	00
VV TINT ❈ 1	13	E0 — FF, 00 — 1F	00
VV SHARPNESS	14	E0 — FF, 00 — 1F	ED
PG SHIFTER	15	01 — FD	**80**
FM ANT ❈ 3	18	00 — 01	00/01
FREE RUN	19	00 — 01	00
NA VXA	1A	00 — FD	92
NB VXA	1B	00 — FD	1A
NC VXA	1C	00 — FD	1A
ND VXA	1D	00 — FD	92
SA VXA	1E	00 — FD	A3
SB VXA	1F	00 — FD	1A
SC VXA	20	00 — FD	1A
SD VXA	21	00 — FD	A3
NA HXA	22	00 — FD	63
NB HXA	23	00 — FD	63
NC HXA	24	00 — FD	06
ND HXA	25	00 — FD	06
SA HXA	26	00 — FD	72
SB HXA	27	00 — FD	72
SC HXA	28	00 — FD	06
SD HXA	29	00 — FD	06
COLOR	2A	00 — FD	**2D**
VCOLOR	2B	00 — FD	00
TINT	2C	00 — FD	EE
PCONTRAST	2D	80 — FD	**C0**
VCONTRAST	2E	80 — FD	88
BH/M	2F	20 — 23	22
BG START	30	00 — 3F	0D
YDL	31	00 — 0F	04
ADJ	32	00 — 0F	05
Y OFFSET	33	80 — 9F	88
BGY	34	40 — 4F	49
SYNC DELAY	35	00 — 03	00
STB DLY	36	00 — FD	1A
L LEVEL	37	00 — FD	1A
MVC	38	00 — 03	00
R-SUB COLOR	39	C0 — FF, 00 — 3F	**00**
R-SUB TINT	3A	E0 — FF, 00 — 1F	**00**
R-SUB BRIGHT	3B	C0 — FF, 00 — 3F	**F0**
R-CONTRAST	3C	C1 — FF, 00	**00**
R-SUB CONTRAST	3D	00 — 0F	**06**

Bold-faced letters ➔ Control functions which need to be adjusted.

Note:

❈ 1 After "SUB COLOR/SUB TINT ADJUSTMENT" for UHF/VHF TUNER /TV DEMODULATOR 2 UNIT is complete, perform as follows.
- Write the same value of SUB COLOR (Address 00) to VV COLOR (Address 12).
- Write the same value of SUB TINT (Address 01) to VV TINT (Address 13).

❈ 2 Address is not displayed on the TV screen.
Other Addresses except above are not used.

❈ 3 In models for USA, set the Default value of FM ANT to "00."
In models for CANADA, set the Default value of FM ANT to "01."

7.3.7. EVR ADJUSTMENT ITEM

The following Items need to be adjusted for EVR adjustment.

- PG SHIFTER ADJUSTMENT

- SUB CONTRAST ADJUSTMENT

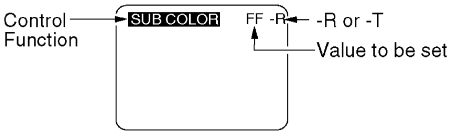
- CUT OFF, DRIVE ADJUSTMENT

- SUB COLOR/SUB TINT ADJUSTMENT
- V. HEIGHT/H. POSITION ADJUSTMENT
- WHITE BALANCE ADJUSTMENT
- SUB BRIGHTNESS ADJUSTMENT

7.3.8. HOW TO ENTER EVR ADJUSTMENT MODE

Press and hold STOP, PLAY, and VOL DOWN buttons on the unit together over 5 seconds with no cassette inserted.
The adjustment overlay will appear.

Fig. E5-1



Note:
This unit has two Tuner.
-R: UHF/VHF TUNER /TV DEMODULATOR 1 UNIT
-T: UHF/VHF TUNER /TV DEMODULATOR 2 UNIT

7.3.8.1. How to adjust:

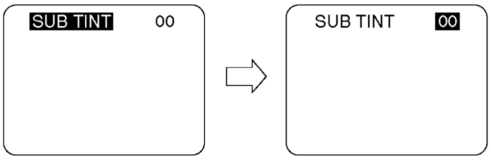
1. **Press CH UP/DOWN key on the remote control to select control function to be adjusted.**

   Important Note:

   Make a note of the original value of the controls before modifying in case the wrong control is adjusted.

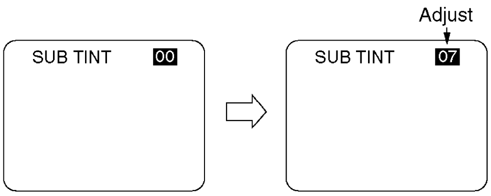
2. **Press VOL UP/DOWN key on the remote control so that the shaded area moves to the value.**

Fig. E5-2



3. **Press CH UP/DOWN key on the remote control to adjust the value of the selected control.**

Fig. E5-3

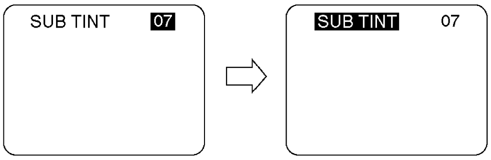


Note:

You can select a desired channel by using the numbered keys on the remote control in EVR adjustment mode.

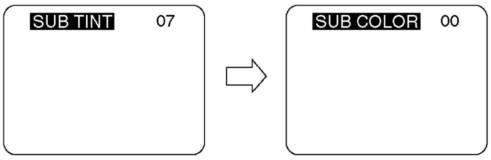
4. Press VOL UP/DOWN key on the remote control so that the shaded area moves to the control function.

Fig. E5-4


SUB TINT
07
SUB TINT
07

5. Press CH UP/DOWN key on the remote control to select a control function for the next adjustment if necessary.

Fig. E5-5


SUB TINT
07
SUB COLOR
00

7.3.8.2. How to release from EVR Adjustment Mode:

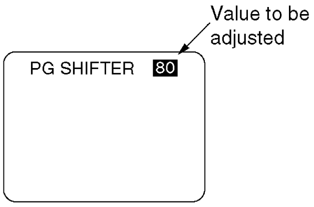
Press and hold STOP, PLAY, and VOL DOWN buttons on the unit together over 5 seconds again or press the POWER button OFF. The adjusted value will be written to Memory IC (IC6004).

7.3.9. HOW TO ENTER EVR PG SHIFTER ADJUSTMENT MODE

1. Enter EVR adjustment mode.

2. Insert the VHS Alignment Tape and playback in SP mode. The adjustment overlay will appear.

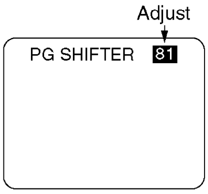
Fig. E5-6


Value to be adjusted
PG SHIFTER
80

7.3.9.1. How to adjust:

Press CH UP/DOWN key on the remote control to adjust the value.

Fig. E5-7


Adjust
PG SHIFTER
81

7.3.9.2. How to release from EVR PG Shifter Adjustment Mode:

Press STOP button or press the POWER button OFF.
The adjusted value will be written to Memory IC (IC6004).

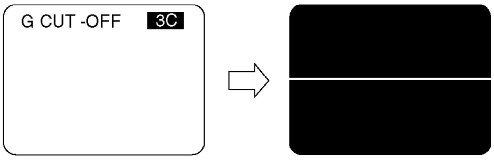
7.3.10. HOW TO ENTER SERVICE MODE

1. Enter EVR adjustment mode.
2. Press DISPLAY key on the remote control for collapse scan.

Note:

Before pressing DISPLAY key on the remote control for collapse scan, select the desired control function and move the shaded area to the value for adjustments you will proceed.

Fig. E5-8



7.3.10.1. How to release from Service Mode:

Press DISPLAY key again on the remote control.

7.3.11. PG SHIFTER ADJUSTMENT

Purpose:

Determine the Video Head Switching Point during Playback.

Symptom of Misadjustment:

May cause Head Switching Noise and/or Vertical Jitter.

Test Point:

TP3001 (TV/VCR Main C.B.A.),
TP6205 (TV/VCR Main C.B.A.)

Adjustment:

PG SHIFTER (EVR)

Specification:

T= 6H±1H (0.38 ms±0.06 ms)

Input:

Mode:

SP Playback

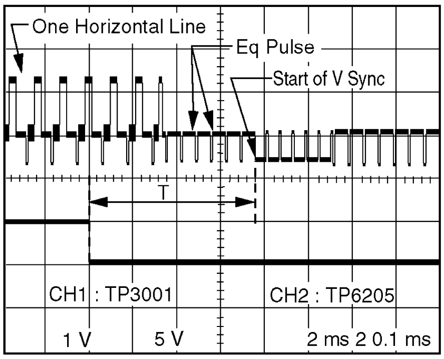
Equipment:

Oscilloscope,
VHS Alignment Tape (VFMS0003H6)

1. Enter EVR PG Shifter Adjustment mode, refer to "HOW TO ENTER EVR PG SHIFTER ADJUSTMENT MODE."

2. Connect the channel-1 scope probe to TP3001 and the channel-2 scope probe to TP6205. Used TP6205 as a trigger.
3. Adjust value so that the trailing edge of the head switching pulse is placed 6H±1H (0.38 ms±0.06 ms) before the start of the vertical sync pulse.
4. Release EVR PG Shifter Adjustment Mode.
   The adjusted value will be written to Memory IC (IC6004).

Fig. E6


One Horizontal Line
Eq Pulse
Start of V Sync
T
CH1 : TP3001
CH2 : TP6205
1 V
5 V
2 ms 2 0.1 ms

7.3.12. SUB CONTRAST ADJUSTMENT

Purpose:

To set the optimum sub contrast level.

Symptom of Misadjustment:

The picture is too dark or too light.

Test Point:

Pin 5 of P8001 (TV PROCESS C.B.A.)
or TP49 (CRT C.B.A.)

Adjustment:

SUB CONTRAST (EVR),
R-SUB CONTRAST (EVR)

Specification:

3.0 V[p-p]±0.1 V[p-p]

Input:

Antenna Input Terminal,
Crosshatch Pattern Signal 1 V[p-p]
(75 Ω terminated)

Mode:

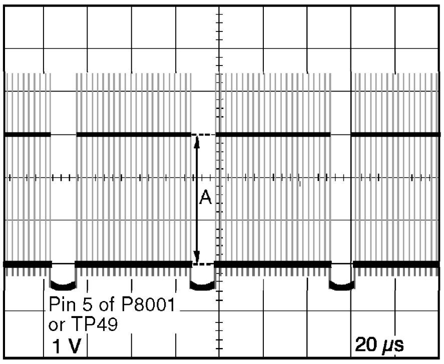
STOP

Equipment:

Oscilloscope,
NTSC Video Pattern Generator

1. **Set to PINP mode, and then set PARENT PICTURE to UHF/VHF TUNER/TV DEMODULATOR 2 UNIT input.**
2. **Supply a Crosshatch Pattern Signal to the Antenna Input Terminal.**
3. **Connect the Oscilloscope to Pin 5 of P8001 on the TV PROCESS C.B.A. or TP49 on the CRT C.B.A.**
4. **Select SUB BRIGHT in EVR adjustment mode. Then, after making a note of the original value, adjust to the (D0).**
5. **Select SUB CONTRAST in EVR adjustment mode and adjust so that the level A is 3.0 V[p-p]±0.1 V[p-p].**
6. **Select SUB BRIGHT in EVR adjustment mode and reset to the original value.**
7. **Set PARENT PICTURE to UHF/VHF TUNER/TV DEMODULATOR 1 UNIT input.**
8. **Select R-SUB BRIGHT in EVR adjustment mode. Then, after making a note of the original value, adjust to the (D0).**
9. **Select R-SUB CONTRAST in EVR adjustment mode and adjust so that the level A is 3.0 V[p-p]±0.1 V[p-p].**
10. **Select R-SUB BRIGHT in EVR adjustment mode and reset to the original value.**

Fig. E7



7.3.13. FOCUS, SCREEN, CUT OFF, DRIVE ADJUSTMENT

Purpose:

To set the optimum Focus and Screen.

Symptom of Misadjustment:

The picture is out of Focus and there will be an improper screen color mix.

Test Point:

TP50 (CRT C.B.A.)

Adjustment:

FOCUS CONTROL (Flyback Transformer),
SCREEN CONTROL (Flyback Transformer),
SUB BRIGHT (EVR),
R- SUB BRIGHT (EVR),
B DRIVE (EVR),
R DRIVE (EVR),
B CUT -OFF (EVR),
G CUT -OFF (EVR),
R CUT -OFF (EVR)

Specification:

Refer to descriptions below.

Input:

Antenna Input Terminal,
Monoscope Pattern Signal

Mode:

STOP

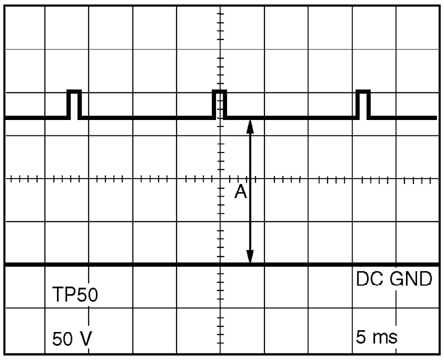
Equipment:

Oscilloscope,
NTSC Video Pattern Generator

1. Set to PINP mode, and then set PARENT PICTURE to UHF/VHF TUNER/TV DEMODULATOR 2 UNIT input.
2. Supply a Monoscope Pattern Signal to the Antenna Input Terminal.
3. Connect the Oscilloscope to TP50 on the CRT C.B.A. (Use TP47 for GND.)

4. Select SUB BRIGHT and move the shaded area to the value in EVR adjustment mode.
5. Adjust the FOCUS CONTROL on the Flyback Transformer so that the center of picture is the sharpest.
6. Turn the SCREEN CONTROL on the Flyback Transformer fully counterclockwise.
7. Press DISPLAY key (Service Switch) on the remote control for collapse scan. (Refer toHOW TO ENTER SERVICE MODE.)
8. Adjust SUB BRIGHT in EVR adjustment mode so that the level A is 185 VDC±5 VDC.

Fig. E8



9. Turn the SCREEN CONTROL on the Flyback Transformer clockwise carefully and stop at the point where any color is first observed.
10. In EVR adjustment mode, select the two colors not observed in step 9 from the following control functions (B CUT -OFF, G CUT -OFF, or R CUT -OFF) and adjust so that the horizontal line becomes white.
    For example, if the horizontal line appeared red in step 9, select and adjust the B CUT -OFF and G CUT -OFF.
11. Press DISPLAY key on the remote control again to return for full frame scan.
12. Select SUB BRIGHT in EVR adjustment mode and adjust so that the picture has adequate brightness.
13. Select G DRIVE and B DRIVE in EVR adjustment mode and adjust so that the entire screen is white.

14. Set PARENT PICTURE to UHF/VHF TUNER/TV DEMODULATOR 1 UNIT input.
15. Select R-SUB BRIGHT and move the shaded area to the value in EVR adjustment mode.
16. Adjust the FOCUS CONTROL on the Flyback Transformer so that the center of picture is the sharpest.
17. Turn the SCREEN CONTROL on the Flyback Transformer fully counterclockwise.
18. Press DISPLAY key (Service Switch) on the remote control for collapse scan. (Refer toHOW TO ENTER SERVICE MODE.)
19. Adjust R-SUB BRIGHT in EVR adjustment mode so that the level A is 180 VDC±5 VDC.
20. Turn the SCREEN CONTROL on the Flyback Transformer clockwise carefully and stop at the point where any color is first observed.
21. In EVR adjustment mode, select the two colors not observed in step 20 from the following control functions (B CUT -OFF, G CUT -OFF, or R CUT -OFF) and adjust so that the horizontal line becomes white.
    For example, if the horizontal line appeared red in step 20, select and adjust the B CUT -OFF and G CUT -OFF.
22. Press DISPLAY key on the remote control again to return for full frame scan.
23. Select R-SUB BRIGHT in EVR adjustment mode and adjust so that the picture has adequate brightness.
24. Select G DRIVE and B DRIVE in EVR adjustment mode and adjust so that the entire screen is white.

Note:

Before pressing DISPLAY key on the remote control for collapse scan, select the desired control function and move the shaded area to the value.

7.3.14. SUB COLOR/SUB TINT ADJUSTMENT

Purpose :

To set the standard color phase.

Symptom of Misadjustment :
Color phase will be shifted.

Test Point:
Pin 5 of P8001 (TV PROCESS C.B.A.)
or TP49 (CRT C.B.A.)

Adjustment:
SUB COLOR (EVR),
SUB TINT (EVR),
R-SUB COLOR (EVR),
R-SUB TINT (EVR)

Specification:
C= 1.50 V[p-p]±0.15 V[p-p]

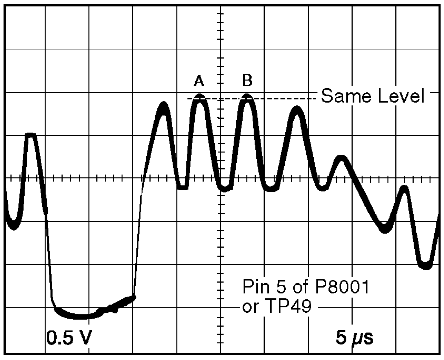
Input:
Antenna Input Terminal,
Rainbow Color Bar

Mode:
STOP

Equipment:
Oscilloscope,
NTSC Video Pattern Generator

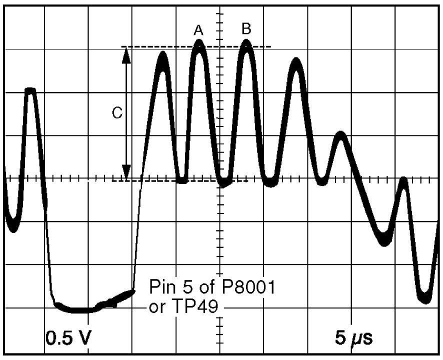
1. Set to PINP mode, and then set PARENT PICTURE to UHF/VHF TUNER/TV DEMODULATOR 2 UNIT input.
2. Supply the Rainbow Color Bar signal to Antenna Input Terminal.
3. Select SUB BRIGHT in EVR adjustment mode. Then, after making a note of the original value, adjust to the minimum (C0).
4. Connect the Oscilloscope to Pin 5 of P8001 on the TV PROCESS C.B.A. or TP49 on the CRT C.B.A.
5. Select SUB TINT in EVR adjustment mode and adjust so that level A and B should be equal in amplitude.

Fig. E9-1



6. Select SUB COLOR in EVR adjustment mode and adjust so that the level C is 1.50 V[p-p]±0.15 V[p-p].

Fig. E9-2



7. Select SUB BRIGHT in EVR adjustment mode and reset to the original value.
8. Set PARENT PICTURE to UHF/VHF TUNER/TV DEMODULATOR 1 UNIT input.
9. Select R-SUB BRIGHT in EVR adjustment mode. Then, after making a note of the original value, adjust to the minimum (C0).
10. Select R-SUB TINT in EVR adjustment mode and adjust so that level A and B should be equal in amplitude.
11. Select R-SUB COLOR in EVR adjustment mode and adjust so that the level C is 1.50 V[p-p]±0.15 V[p-p].

Note:
After "SUB COLOR/SUB TINT ADJUSTMENT" for UHF/VHF TUNER /TV DEMODULATOR 2 UNIT is is complete, perform as follows.

- Write the same value of SUB COLOR (Address 00) to VV COLOR (Address 12).
- Write the same value of SUB TINT (Address 01) to VV TINT (Address 13).

7.3.15. V. HEIGHT/H. POSITION ADJUSTMENT

Purpose :

To set the standard vertical and horizontal picture size.

Symptom of Misadjustment :

The picture size is on the vertical and horizontal axis is abnormal.

Test Point:

Adjustment:

V SIZE (EVR),
H CENTER (EVR),
V POSITION (EVR)

Specification:

Refer to descriptions below.

Input:

Video Input Jack,
Monoscope Pattern Signal

Mode:

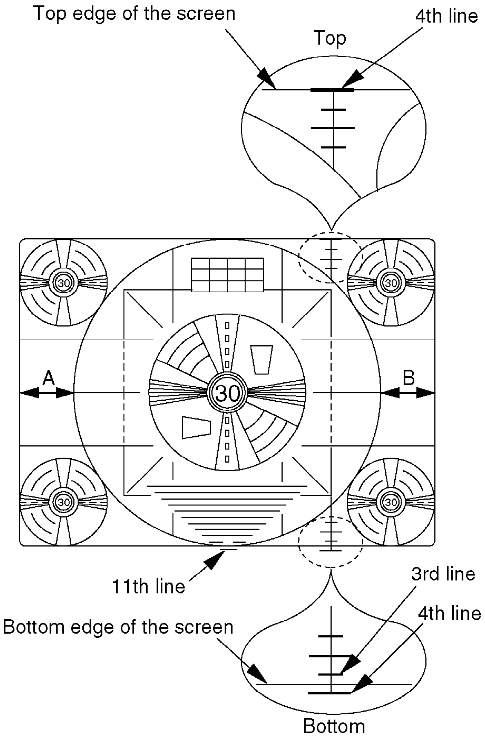
STOP

Equipment:

NTSC Video Pattern Generator

1. **Supply a Monoscope Pattern Signal to the Video Input Jack.**
2. **Select H CENTER in EVR adjustment mode and adjust so that A is approximately equal to width B.**
3. **Select V SIZE in EVR adjustment mode and adjust so that the top 4th line is just in view.**
4. **Confirm that the bottom 3rd line is in view and that the bottom 4th line is out of view.**
   If the line are not positioned correctly, select V POSITION in adjustment node and adjustment correctly.

Fig. E10


Top edge of the screen
Top
4th line
A
B
30
11th line
3rd line
4th line
Bottom edge of the screen
Bottom

7.3.16. WHITE BALANCE ADJUSTMENT

Purpose:

To set the standard white level for each color temperature.

Symptom of Misadjustment :

White becomes bluish or reddish.

Test Point:

TP50 (CRT C.B.A)

Adjustment:

FOCUS CONTROL (Flyback Transformer),
SCREEN CONTROL (Flyback Transformer),
SUB BRIGHT (EVR),
R-SUB BRIGHT (EVR),
G DRIVE (EVR),
B DRIVE (EVR),
R CUT -OFF (EVR),
G CUT -OFF (EVR),
B CUT -OFF (EVR)

Specification:

Refer to descriptions below.

Input:

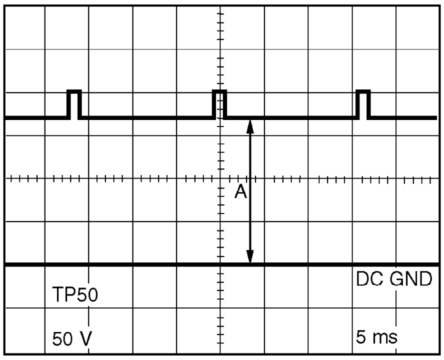
Antenna Input Terminal,
Monoscope Pattern Signal,
White Pattern Signal

Mode:
STOP

Equipment:
NTSC Video Pattern Generator,
White Pattern Generator,
Oscilloscope

1. **Set to PINP mode, and then set PARENT PICTURE to UHF/VHF TUNER/TV DEMODULATOR 2 UNIT input.**
2. **Supply a Monoscope Pattern Signal to the Antenna Input Terminal.**
3. **Connect the Oscilloscope to TP50 on the CRT C.B.A. (Use TP47 for GND.)**
4. **Select SUB BRIGHT and move the shaded area to the value in EVR adjustment mode.**
5. **Adjust the FOCUS CONTROL on the Flyback Transformer so that the center of picture is the sharpest.**
6. **Press DISPLAY key (Service Switch) on the remote control for collapse scan. (Refer toHOW TO ENTER SERVICE MODE.)**
7. **Turn the SCREEN CONTROL on Flyback Transformer fully counterclockwise.**
8. **Adjust SUB BRIGHT in EVR adjustment mode so that the level A is 185 VDC±5 VDC.**

Fig. E11



9. **Turn the SCREEN CONTROL on the Flyback Transformer**

clockwise carefully and stop at the point where any color is first observed.

10. In EVR adjustment mode, select the two colors not observed in step 9 from the following control functions (B CUT -OFF, G CUT -OFF, or R CUT -OFF) and adjust so that the horizontal line becomes white.
    For example, if the horizontal line appeared red in step 9, select and adjust the B CUT -OFF and G CUT -OFF.
11. Supply a White Pattern Signal to the Antenna Input Terminal.
12. Press DISPLAY key on the remote control again to return for full frame scan.
13. Select G DRIVE and B DRIVE in EVR adjustment mode and adjust so that the entire screen is white.
14. Select SUB BRIGHT in EVR adjustment mode. Then, after making a note of the original value, adjust to the minimum (C0) and while turning SUB BRIGHT value from minimum (C0) up to maximum (3F), confirm that the screenis tracking the White Pattern properly. Repeat the above steps 6, 10, 12, and 13 until the screen is properly tracking the White Pattern.
15. Set PARENT PICTURE to UHF/VHF TUNER/TV DEMODULATOR 1 UNIT input.
16. Connect the Oscilloscope to TP50 on the CRT C.B.A.
    (Use TP47 for GND.)
17. Select R-SUB BRIGHT and move the shaded area to the value in EVR adjustment mode.
18. Adjust the FOCUS CONTROL on the Flyback Transformer so that the center of picture is the sharpest.
19. Press DISPLAY key (Service Switch) on the remote control for collapse scan. (Refer toHOW TO ENTER SERVICE MODE.)
20. Turn the SCREEN CONTROL on Flyback Transformer fully counterclockwise.
21. Adjust R-SUB BRIGHT in EVR adjustment mode so that the level A is 185 VDC±5 VDC.

22. Turn the SCREEN CONTROL on the Flyback Transformer clockwise carefully and stop at the point where any color is first observed.

23. In EVR adjustment mode, select the two colors not observed in step 22 from the following control functions (B CUT -OFF, G CUT -OFF, or R CUT -OFF) and adjust so that the horizontal line becomes white.
For example, if the horizontal line appeared red in step 22, select and adjust the B CUT -OFF and G CUT -OFF.

24. Supply a White Pattern Signal to the Antenna Input Terminal.

25. Press DISPLAY key on the remote control again to return for full frame scan.

26. Select G DRIVE and B DRIVE in EVR adjustment mode and adjust so that the entire screen is white.

27. Select R-SUB BRIGHT in EVR adjustment mode. Then, after making a note of the original value, adjust to the minimum (C0) and while turning SUB BRIGHT value from minimum (C0) up to maximum (3F), confirm thatthe screen is tracking the White Pattern properly. Repeat the above steps 19, 23, 25, and 26 until the screen is properly tracking the White Pattern.

Note:

Before pressing DISPLAY key on the remote control for collapse scan, select the desired control function and move the shaded area to the value.

7.3.17. SUB BRIGHTNESS ADJUSTMENT

Purpose :

To set the optimum brightness level.

Symptom of Misadjustment :

The picture is too white or too black.

Note:

Perform this adjustment in a darkened room.

Test Point:

Adjustment:
SUB BRIGHT (EVR)

Specification:
Refer to descriptions below.

Input:

Mode:
STOP

1. Do not input any signal to the unit.
2. Set INPUT SELECT item to LINE in SET UP TV menu to display black screen.
3. Select SUB BRIGHT in EVR adjustment mode, and adjust so that the black screen starts to turn grey (lighting only).

7.3.18. PINP CHROMINANCE LEVEL ADJUSTMENT

Purpose:
To set the optimum chrominance level.

Symptom of Misadjustment:
The CHILD PICTURE is too white or too black.

Test Point:
TP5312 (TV PROCESS C.B.A.)

Adjustment:
COLOR (EVR)

Specification:
Refer to descriptions below.

Input:
Video Input Jack,
100% chrominance signal

Mode:
STOP

Equipment:
NTSC Video Pattern Generator,
Oscilloscope

1. Set to PINP mode, and then move CHILD PICTURE to the upper left on monitor.

2. Supply a 100% chrominance signal to the Video Input Jack.

3. Connect the Oscilloscope to TP5312 on the TV PROCESS C.B.A.

4. Select COLOR in EVR adjustment mode and adjust so that level A and B should be equal in amplitude.

Fig. E12-1

(Before Adjustment)

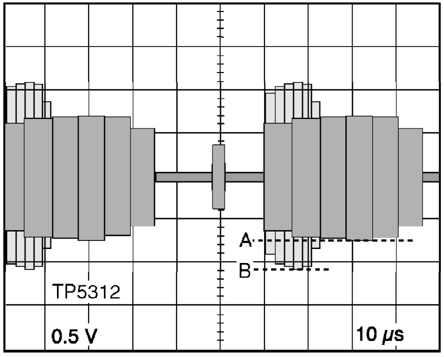
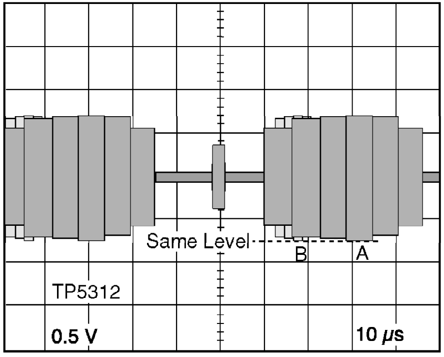


Fig. E12-2

(After Adjustment)



7.3.19. PINP LUMINANCE LEVEL ADJUSTMENT

Purpose :

To set the optimum luminance level.

Symptom of Misadjustment :

The CHILD PICTURE is too light or too dark.

Test Point:

TP5305 (TV PROCESS C.B.A.)

Adjustment:

PCONTRAST (EVR)

Specification:

Refer to descriptions below.

Input:
Video Input Jack,
Color Bar signal

Mode:
STOP

Equipment:
NTSC Video Pattern Generator,
Oscilloscope

1. **Set to PINP mode, and then move CHILD PICTURE to the upper left on monitor.**
2. **Supply a Color Bar signal to the Video Input Jack.**
3. **Connect the Oscilloscope to TP5305 on the TV PROCESS C.B.A.**
4. **Select PCONTRAST in EVR adjustment mode and adjust so that level A and B should be equal in amplitude.**

Fig. E13-1

(Before Adjustment)

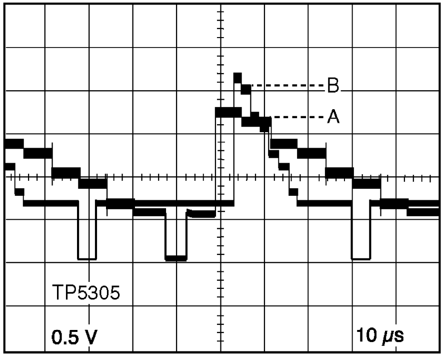
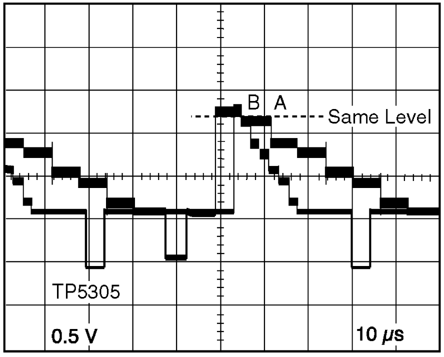


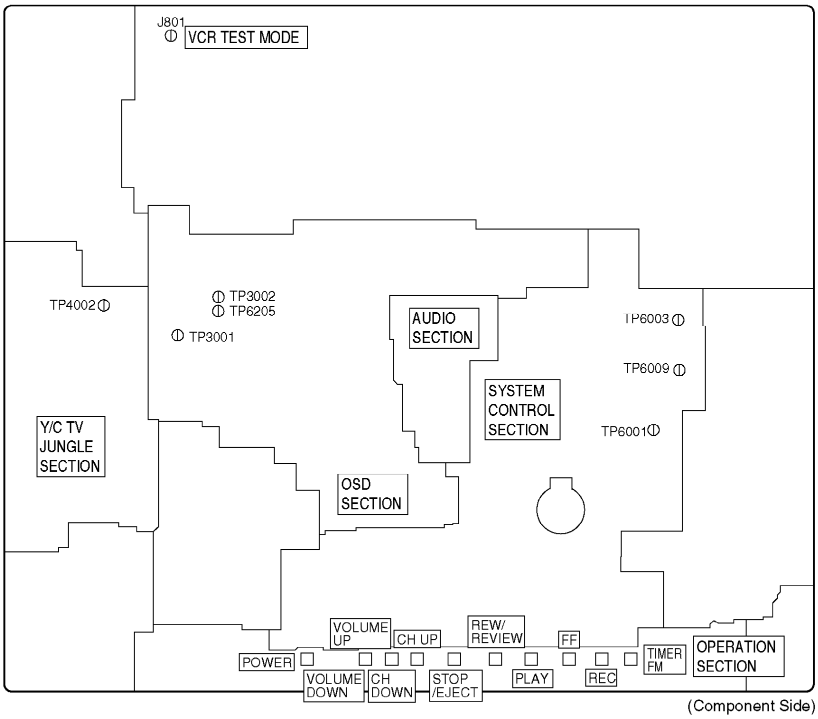
Fig. E13-2

(After Adjustment)



7.4. TEST POINTS AND CONTROL LOCATION

Main C.B.A.


J801
VCR TEST MODE
TP3002
TP6205
TP3001
TP4002
AUDIO SECTION
TP6003
TP6009
SYSTEM CONTROL SECTION
TP6001
Y/C TV JUNGLE SECTION
OSD SECTION
VOLUME UP
CH UP
REW/ REVIEW
FF
POWER
TIMER FM
OPERATION SECTION
VOLUME DOWN
CH DOWN
STOP /EJECT
PLAY
REC

(Component Side)

FUNCTION OF IMPORTANT TEST POINTS	
TP3001	Video Signal
TP3002	REC/PB Video envelope signal
TP4002	Normal Audio signal
TP6001	Service Test Point (inhibit sensors)
TP6003	Defeat Auto tracking function (connect to +5V(TP6009))
TP6009	+5V
TP6205	Head SW.

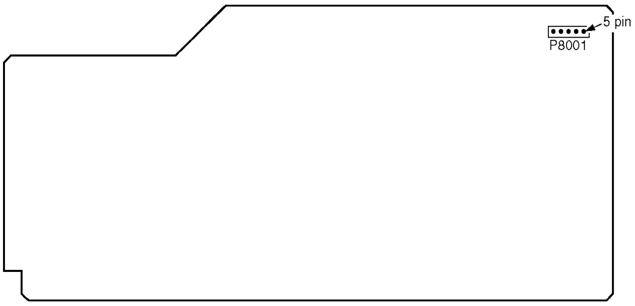
Test Point Information

● Test Point with a Test Pin.

⦶ Test Point with a jumper wire across a hole in the P.C.B.

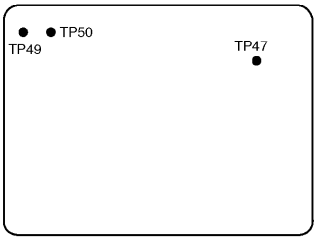
○ Test Point with no Test Pin.

TV PROCESS C.B.A.



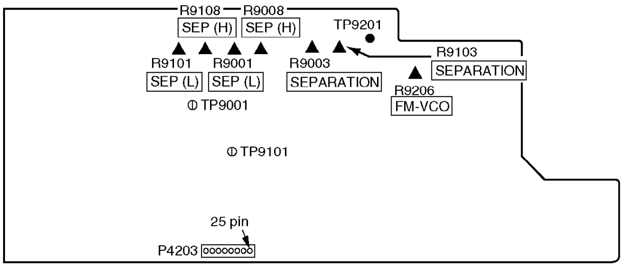
(Foil Side)

CRT C.B.A.


TP50
TP49
TP47

(Foil Side)

Audio C.B.A.


R9108
R9008
SEP (H)
SEP (H)
TP9201
R9103
SEPARATION
R9101
R9001
R9003
SEP (L)
SEP (L)
SEPARATION
R9206
FM-VCO
TP9001
TP9101
25 pin
P4203

(Foil Side)

8. SCHEMATIC DIAGRAMS

8.1. SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES

8.2. MAIN I (SYSTEM CONTROL/SERVO/OPERATION/CYLINDER DRIVE) SCHEMATIC DIAGRAM

8.3. MAIN II (SIGNAL PROCESS/OSD/AUDIO) SCHEMATIC DIAGRAM

8.4. MAIN III SCHEMATIC DIAGRAM

8.5. MAIN IV (AUDIO AMP) SCHEMATIC DIAGRAM

8.6. MAIN V (POWER SUPPLY) SCHEMATIC DIAGRAM

8.7. MAIN VI/ TV POWER SCHEMATIC DIAGRAM

8.8. MAIN VII (DEMODULATOR) SCHEMATIC DIAGRAM

8.9. MAIN VIII SCHEMATIC DIAGRAM

8.10. AUDIO SCHEMATIC DIAGRAM

8.11. TV PROCESS I SCHEMATIC DIAGRAM

8.12. TV PROCESS II SCHEMATIC DIAGRAM

8.13. VERTICAL SCHEMATIC DIAGRAM

8.14. Hi-Fi AUDIO/VIDEO HEAD AMP SCHEMATIC DIAGRAM

8.15. CRT SCHEMATIC DIAGRAM

8.16. CAPSTAN STATOR SCHEMATIC DIAGRAM

8.17. INTERCONNECTION SCHEMATIC DIAGRAM

8.18. SIGNAL WAVEFORM

8.19. VOLTAGE CHART

9. CIRCUIT BOARD LAYOUT

9.1. TV/VCR MAIN C.B.A.

9.2. AUDIO C.B.A.

9.3. TV PROCESS C.B.A.

9.4. VERTICAL C.B.A./ TV POWER C.B.A./ CAPSTAN STATOR C.B.A.

9.5. Hi-Fi AUDIO/VIDEO HEAD AMP C.B.A./ CRT C.B.A.

10. BLOCK DIAGRAMS

10.1. POWER SUPPLY BLOCK DIAGRAM

10.2. VIDEO SIGNAL PATH BLOCK DIAGRAM

10.3. AUDIO SIGNAL PATH BLOCK DIAGRAM

10.4. MTS/SAP SIGNAL PATH BLOCK DIAGRAM

10.5. Hi-Fi AUDIO SIGNAL PATH BLOCK DIAGRAM

10.6. SYSTEM CONTROL BLOCK DIAGRAM

10.7. SERVO BLOCK DIAGRAM

10.8. PICTURE IN PICTURE BLOCK DIAGRAM

10.9. TV/YC PROCESS BLOCK DIAGRAM

11. EXPLODED VIEWS

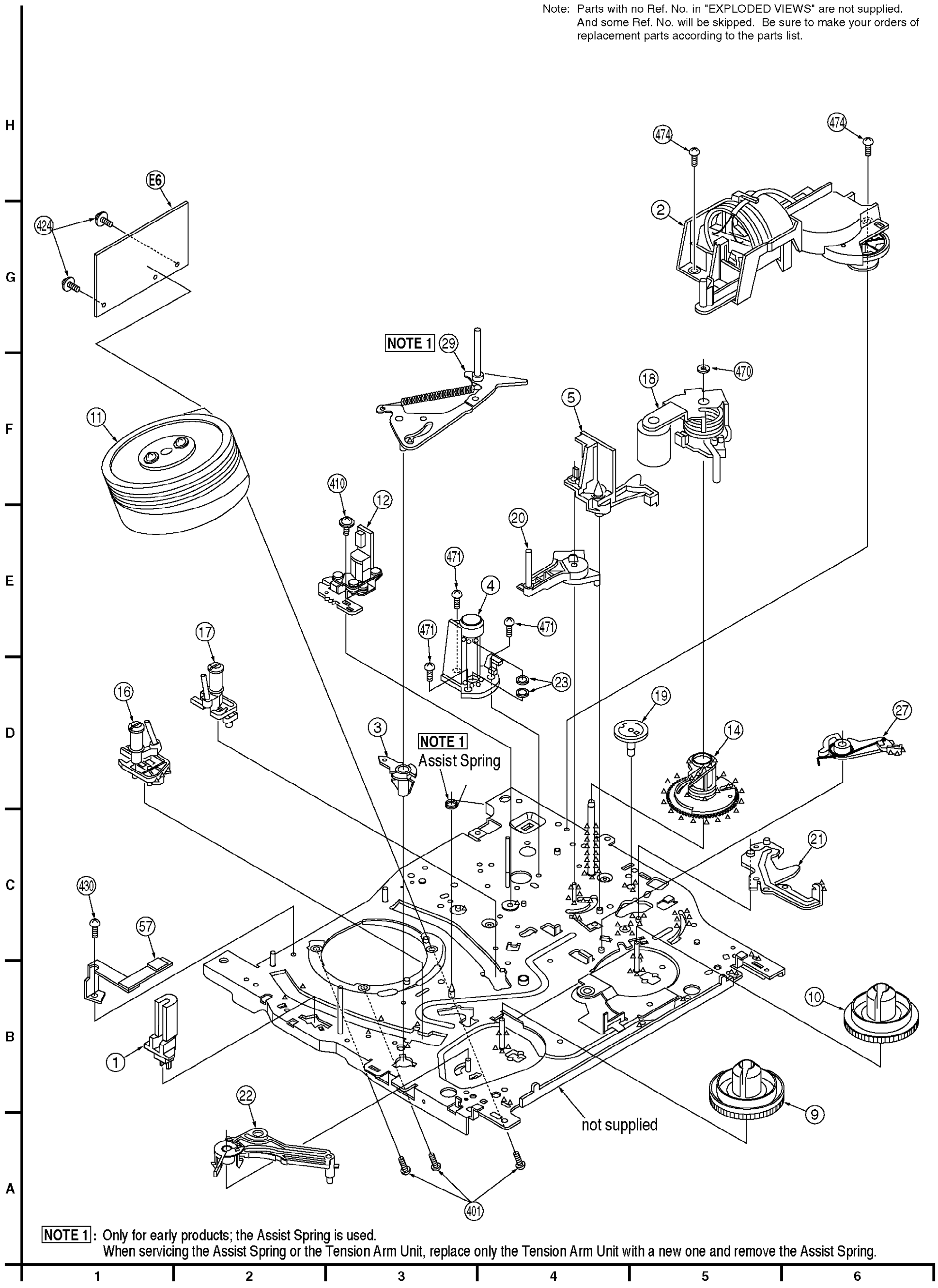
11.1. MECHANISM (TOP) SECTION

❶ MECHANISM (TOP) SECTION

LUBRICATION POINTS
When the marked parts are replaced, apply the recommended lubricants or adhesive for better maintenance of the unit.

Mark	Kind of Lubricant	Availability	Part Number
○○○	Spindle Oil	Purchase from Local Supplier	- - - - - - - -
△△△	Grease	Available from Factory	VFKS0081

Note: Parts with no Ref. No. in "EXPLODED VIEWS" are not supplied. And some Ref. No. will be skipped. Be sure to make your orders of replacement parts according to the parts list.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5
6
E6
424
474
474
2
NOTE 1
29
470
18
5
11
410
12
20
471
4
471
471
23
17
16
19
14
27
3
NOTE 1
Assist Spring
21
430
57
10
1
22
not supplied
9
401

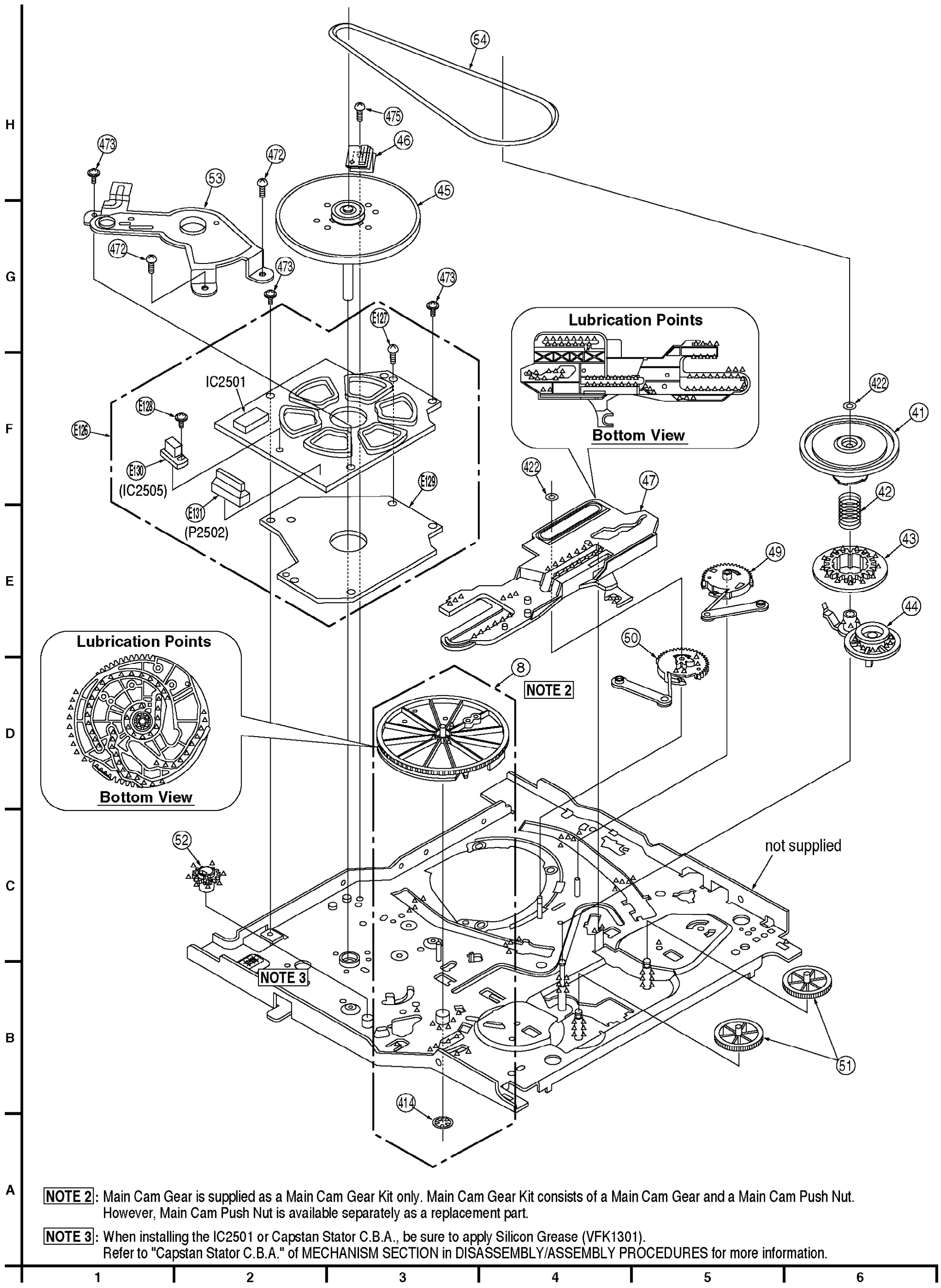
NOTE 1 : Only for early products; the Assist Spring is used.
When servicing the Assist Spring or the Tension Arm Unit, replace only the Tension Arm Unit with a new one and remove the Assist Spring.

11.2. MECHANISM (BOTTOM) SECTION

❷ MECHANISM (BOTTOM) SECTION

LUBRICATION POINTS
When the marked parts are replaced, apply the recommended lubricants or adhesive for better maintenance of the unit.

Mark	Kind of Lubricant	Availability	Part Number
XXX	Silicon Grease	Available from Factory	VFK1301
ΔΔΔ	Grease	Available from Factory	VFKS0081



H
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C
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3
4
5
6
(54)
(475)
(46)
(45)
(473)
(472)
(53)
(472)
(473)
(473)
(E127)
IC2501
(E128)
(E126)
(E130)
(IC2505)
(E131)
(P2502)
(E129)
Lubrication Points
Bottom View
(422)
(47)
(422)
(41)
(42)
(43)
(49)
(44)
(50)
(8)
NOTE 2
Lubrication Points
Bottom View
(52)
not supplied
NOTE 3
(51)
(414)

NOTE 2: Main Cam Gear is supplied as a Main Cam Gear Kit only. Main Cam Gear Kit consists of a Main Cam Gear and a Main Cam Push Nut. However, Main Cam Push Nut is available separately as a replacement part.

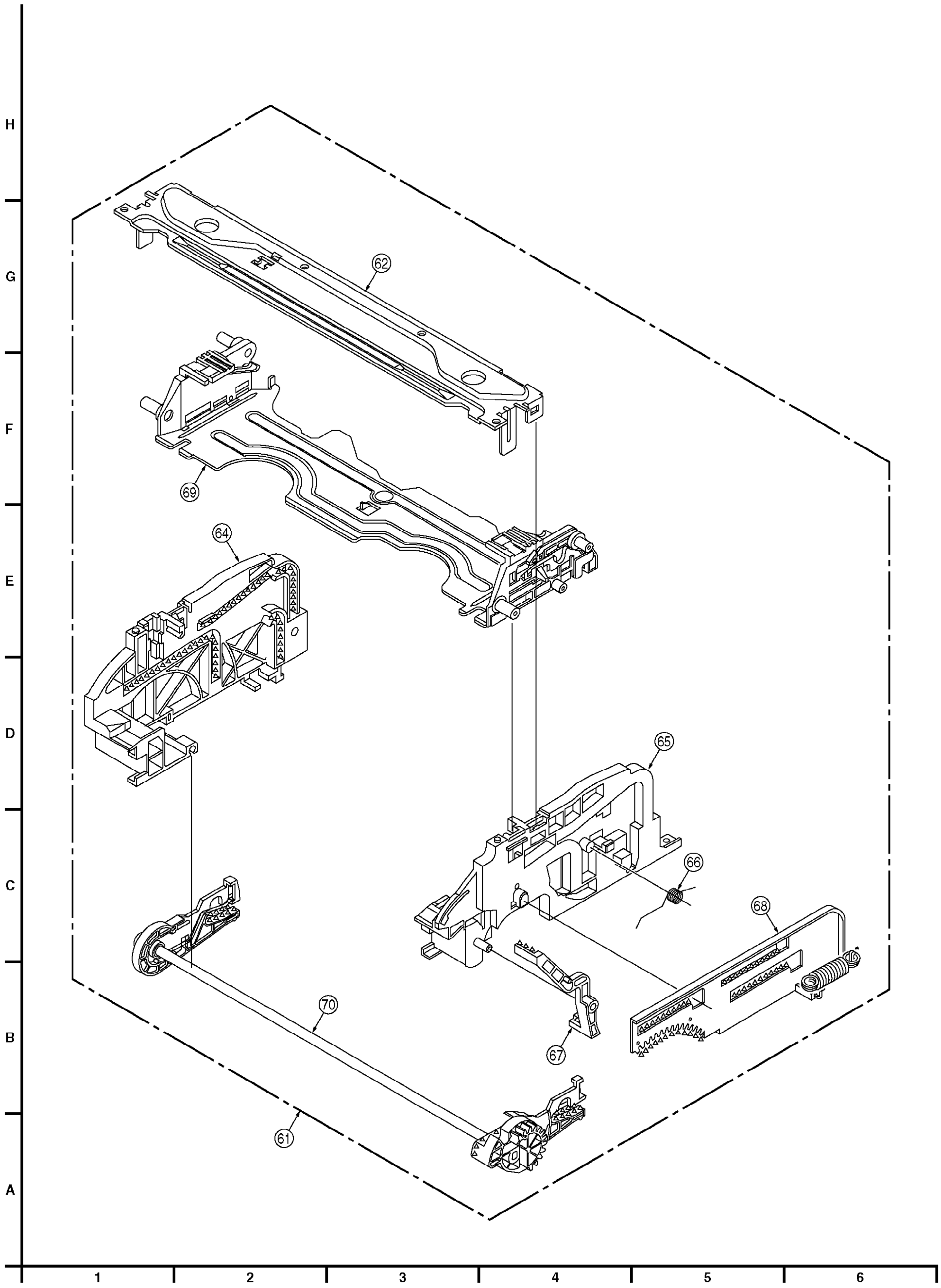
NOTE 3: When installing the IC2501 or Capstan Stator C.B.A., be sure to apply Silicon Grease (VFK1301). Refer to "Capstan Stator C.B.A." of MECHANISM SECTION in DISASSEMBLY/ASSEMBLY PROCEDURES for more information.

11.3. CASSETTE UP COMPARTMENT SECTION

❸ CASSETTE UP COMPARTMENT SECTION

LUBRICATION POINTS
When the marked parts are replaced, apply the recommended lubricants or adhesive for better maintenance of the unit.

Mark	Kind of Lubricant	Availability	Part Number
△△△	Grease	Available from Factory	VFKS0081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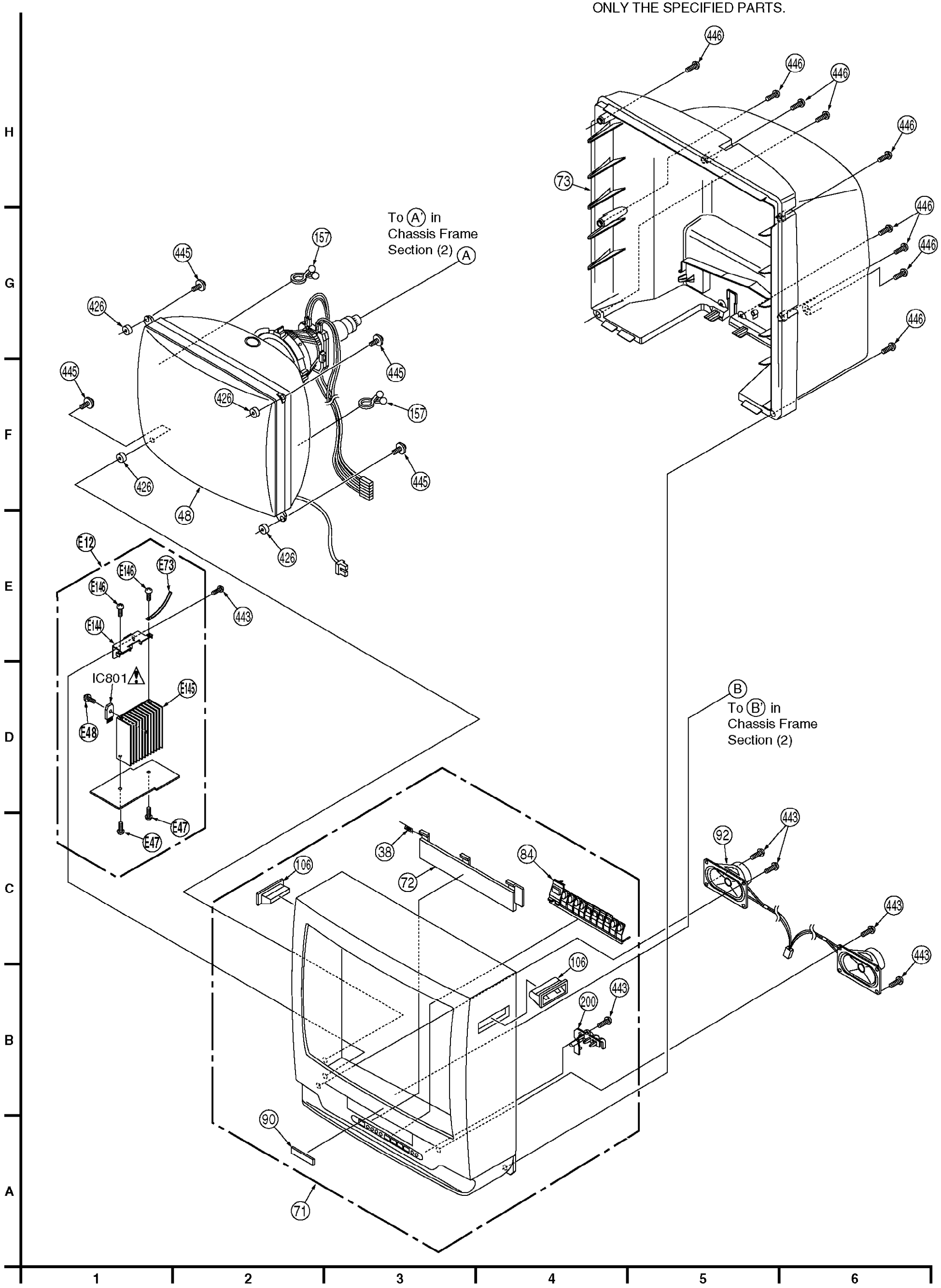
62
69
64
65
66
68
70
67
61

11.4. CHASSIS FRAME SECTION (1)

❹ CHASSIS FRAME SECTION (1)

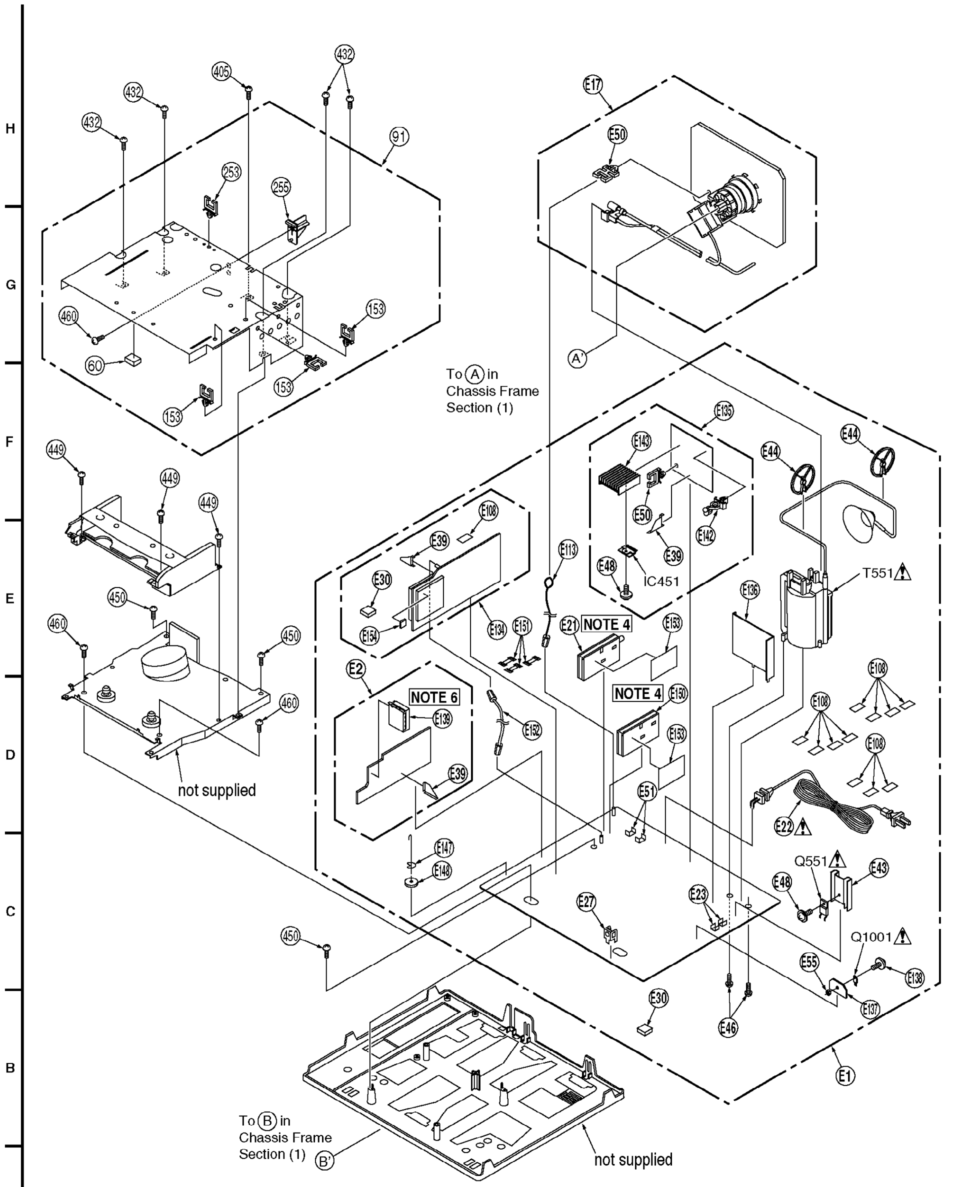
IMPORTANT SAFETY NOTICE
COMPONENTS IDENTIFIED BY THE SIGN ⚠ HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.


446
446
446
446
446
446
446
73
To Ⓐ' in
Chassis Frame
Section (2) Ⓐ
157
445
426
445
445
426
157
426
445
48
426
E12
E146
E73
E146
443
E140
IC801⚠
E145
E48
E47
E47
Ⓑ
To Ⓑ' in
Chassis Frame
Section (2)
92
443
106
38
84
72
443
443
106
200
443
90
71
H
G
F
E
D
C
B
A
1
2
3
4
5
6

11.5. CHASSIS FRAME SECTION (2)

IMPORTANT SAFETY NOTICE
COMPONENTS IDENTIFIED BY THE SIGN ⚠ HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.

❺ CHASSIS FRAME SECTION (2)

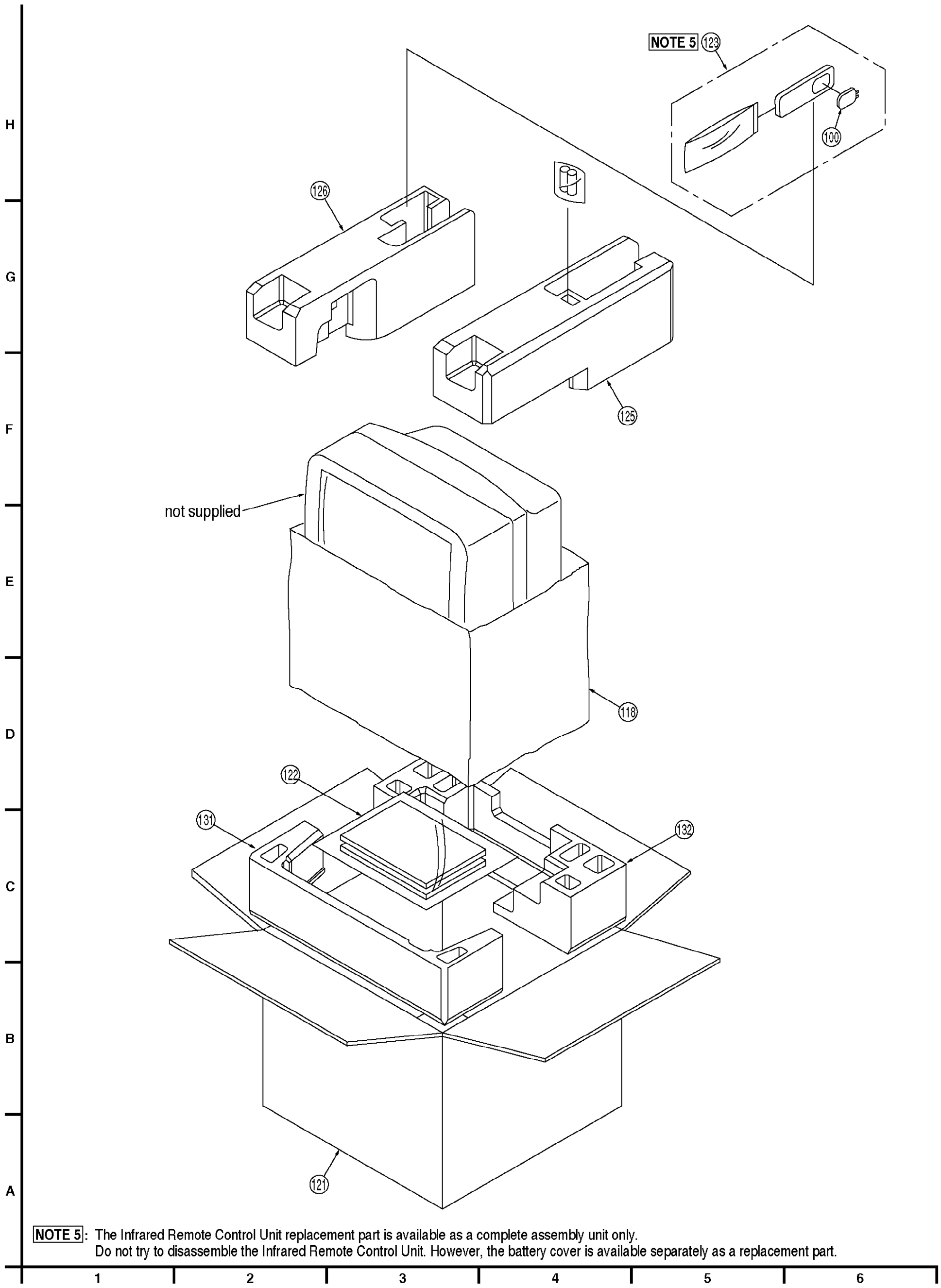

H
G
F
E
D
C
B
A
405
432
432
432
91
253
255
460
60
153
153
153
449
449
449
450
460
450
460
not supplied
450
E17
E50
A'
To A in
Chassis Frame
Section (1)
E135
E143
E44
E44
E50
E142
E39
E48
IC451
T551⚠
E108
E39
E30
E154
E134
E131
E113
E21
NOTE 4
E153
E136
E108
E108
E108
E2
NOTE 6
E139
E39
E152
NOTE 4
E150
E153
E51
E22⚠
Q551⚠
E43
E48
E147
E148
E27
E23
Q1001⚠
E55
E138
E137
E30
E46
E1
To B in
Chassis Frame
Section (1)
B'
not supplied

NOTE 4: Since the UHF/VHF TUNER/TV DEMODULATOR UNIT 1 and the UHF/VHF TUNER/TV DEMODULATOR UNIT 2 have already been pre-adjusted at the factory, do not try to adjust them. Their replacement parts are available as a complete assembly unit only.

NOTE 6: Since the FM TRANSMITTER C.B.A. has already been pre-adjusted at the factory, do not try to adjust the FM TRANSMITTER C.B.A. The FM TRANSMITTER C.B.A. replacement part is available as a complete assembly unit only.

11.6. PACKING PARTS AND ACCESSORIES SECTION

❻ PACKING PARTS AND ACCESSORIES SECTION


NOTE 5
123
100
126
125
not supplied
118
122
131
132
121
H
G
F
E
D
C
B
A
1
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6

NOTE 5: The Infrared Remote Control Unit replacement part is available as a complete assembly unit only.
Do not try to disassemble the Infrared Remote Control Unit. However, the battery cover is available separately as a replacement part.

12. REPLACEMENT PARTS LISTS

BEFORE REPLACING PARTS, READ THE FOLLOWING:

12.1. REPLACEMENT NOTES

12.1.1. General Notes

1. Use only original replacement parts:

To maintain original function and reliability of repaired units, use only original replacement parts which are listed with their part numbers in the parts list.

2. IMPORTANT SAFETY NOTICE
   Components identified by the sign⚠ have special characteristics important for safety. When replacing any of these components, use only the specified parts.
3. SPECIAL NOTE
   All integrated circuits and many other semiconductor devices are electrostatically sensitive and therefore require the special handling techniques described under the "ELECTROSTATICALLY SENSITIVE (ES) DEVICES" section of this servicemanual.
4. Parts with no Ref. No. in "EXPLODED VIEWS" are not supplied. And some Ref. No. will be skipped. Be sure to make your orders of replacement parts according to the parts list.
5. Parts different in shape or size may be used. However, only interchangeable parts will be supplied as service replacement parts.
6. Parts with mark "MKA" in Remarks column are supplied from MKA. Others are supplied from MKE.

12.1.2. Mechanical Replacement Notes

1. Section No. of parts shown in Exploded Views are indicated in the Remarks column.
2. Main Cam Gear is supplied as a Main Cam Gear Kit (Ref. No. 8) only. Main Cam Gear Kit consists of a Main Cam Gear and a Main Cam Push Nut. However, Main Cam Push Nut is available separately as a replacementpart.
3. The Infrared Remote Control Unit (Ref. No. 123) replacement part is available as a complete assembly unit only. Do not try to disassemble the Infrared Remote Control Unit. However, the battery cover is availableseparately as a replacement part.
4. Cut Washer (Ref. No. 470) is not reusable.
   If removed, install a new one.

5. Main Cam Push Nut (Ref. No. 414) is not reusable.
If removed, install a new one.

12.1.3. Electrical Replacement Notes

1. Item numbers with capital letter E (Example: E1, E2,...) in the Ref. No. column are shown in the exploded views.
2. The parts with " ■ " mark are supplied as a unit and their individual parts are also supplied separately. The parts with " ▲ " mark are supplied as a unit and their individual parts are alsosupplied separately, and are included in " ■ " parts listed directly above in the parts list.
3. Unless otherwise specified;
   All resistors are in Ω , 1/4 W,±5%, carbon, K= 1,000 Ω ,
   M= 1,000 k Ω .
   All capacitors are in µ F, P= µ µ F,±10%.
   All coils are in µ H, M= 1,000 µ H,±10%.
4. Abbreviation
   RTL: Retention Time Limited
   This indicates that the retention time is limited for this item. After the discontinuation of this item in production, it will no longer be available.
   NR: Non Repairable Board Ass'y
   MGF CHIP: Metal Glaze Film Chip
   C CHIP: Ceramic Chip
   COMPLX CMP: Complex Component
   W FLMPRF: Wirewound Flameproof
   C.B.A.: Circuit Board Assembly
   P.C.B.: Printed Circuit Board
   E.S.D.: Electrostatically Sensitive Devices
5. SERVICE OF CHIP PARTS
   When servicing chip parts, please use a soldering iron of less than 30 W. Refer to "IC, TRANSISTOR AND CHIP PART INFORMATION" page.
6. The parts with " ● " are 0 Ω resistor. When replacing, a wire can be substituted for a 0 Ω resistor.

7. **Capstan Stator C.B.A. replacement note:**
   The following parts on the Capstan Stator C.B.A. (VEMS0331) are not supplied separately. Please order and replace with the circuit board assembly instead of individual parts.
   (Q2501, Q2502, Q2503, Capstan Coil)
8. **When installing the IC2501 (AN3846SC or AN3845SC) or Capstan Stator C.B.A., be sure to apply Silicon Grease (VFK1301). Refer to "Stopper Angle, Capstan RotorUnit, Oil Seal, Capstan Stator C.B.A., and MR Head" of MECHANISM SECTION in DISASSEMBLY/ ASSEMBLY PROCEDURES.**
9. **Since the UHF/VHF TUNER/TV DEMODULATOR UNIT 1 (Ref. No. E21) and the UHF/VHF TUNER/TV DEMODULATOR UNIT 2 (Ref. No. E150) have already been pre-adjusted at the factory, donot try to adjust them. Their replacement parts are available as a complete assembly unit only.**
10. **Since the FM TRANSMITTER C.B.A. (Ref. No. E139) has already been pre-adjusted at the factory, do not try to adjust the FM TRANSMITTER C.B.A. The FM TRANSMITTER C.B.A. replacement part is available as a completeassembly unit only.**
11. **EEPROM IC (IC6004),**
    TV/VCR Main C.B.A. replacement note:
    When replacing EEPROM IC (IC6004) or TV/VCR Main C.B.A., be sure to write the initial data with remote control.

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
PV-C2780	A
PV-C2780-K	B

12.2. MECHANICAL REPLACEMENT PARTS LIST

12.2.1. MECHANISM PARTS ON CHASSIS

Ref. No.	Part No.	Part Name& Description	Remarks
1	VBSS0033	FULL ERASE HEAD	1
2	VXKS0890	MOTOR BLOCK UNIT	1
3	LSDB0045	TENSION ARM BOSS	1
4	VXDS0212	CAPSTAN HOLDER UNIT	1
5	LSMD0209	OPENER PIECE	1
8	VVGS0009	MAIN CAM GEAR KIT	2
9	LSDR0004	S REEL TABLE	1
10	LSDR0005	T REEL TABLE	1
11	VEGS0429	CYLINDER UNIT	1
12	VEHS0583	AUDIO CONTROL/ERASE HEAD UNIT	1
14	LSDG0112	LIFT GEAR	1
16	VXDS0213	LOADING POST BASE-S UNIT	1
17	VXDS0214	LOADING POST BASE-T UNIT	1
18	VXLS1094	PINCH ARM UNIT	1
19	LSDG0110	INTERMEDIATE GEAR A	1
20	VXLS1101	P5 ARM UNIT	1
21	LSML0131	DRIVE RACK ARM	1
22	VXLS1103	TENSION CONTROL ARM UNIT	1
23	LSMX0129	OIL SEAL	1
27	VXLS1100	T BRAKE UNIT	1
29	VXLS1102	TENSION ARM UNIT	1
38	LSMB0221	CASSETTE DOOR SPRING	4 MKA
41	VXPS0389	CENTER CLUTCH UNIT	2
42	VMBS1151	CHANGING GEAR SPRING	2
43	LSDG0114	CHANGING GEAR	2
44	VXLS1091	IDLER ARM UNIT	2
45	VXPS0391	CAPSTAN ROTOR UNIT	2
46	LSMA0387	STOPPER ANGLE	2
47	LSMM0002	MAIN ROD	2
48	LXQVB01270	COLOR PICTURE TUBE UNIT	4 MKA
49	VXLS1099	S LOADING ARM UNIT	2
50	VXLS1098	T LOADING ARM UNIT	2
51	LSDG0116	REEL GEAR	2
52	LSDG0111	INTERMEDIATE GEAR B	2
53	LSMA0423	SUPPORT ANGLE	2
54	LSDV0007	CAPSTAN BELT SQUARE,RUBBER 2MM	2
57	LSSA0003	GROUNDING PLATE UNIT	1
60	VMFS0311	CUSHION	5
61	VXYS1347	CASSETTE UP ASS'Y	3
62	LSMA0352	TOP PLATE	3
64	LSMD0174	SIDE PLATE L	3
65	LSMD0173	SIDE PLATE R	3
66	LSMB0218	SUPPORT SPRING	3
67	LSML0096	OPENER LEVER	3
68	VXLS1111	DRIVE RACK UNIT	3
69	VXAS4423	HOLDER UNIT	3
70	VXLS1110	WIPER ARM UNIT	3
71	LXQKY01270	FRONT CABINET ASS'Y	4 MKA
72	LXQKF01270	CASSETTE DOOR-LID UNIT	4 MKA
73		REAR COVER UNIT	
	LXQKV01270	(A)	4 MKA
	LXQKV01270K	(B)	4 MKA
84	LBX61070B	OPERATION BUTTON	4 MKA
90	TBM173052	BADGE,ABS RESIN	4

Ref. No.	Part No.	Part Name& Description	Remarks
91	LXQUS01270K	TOP SHIELD PLATE ASS'Y	5 MKA
92	LXQAS2209S	SPEAKER UNIT	4 MKA
100	VKFS2235	BATTERY COVER	6 MKA
106	TKK778205-3	HANDLE	4 MKA
118	LPE64005A	BAG,POLYETHYLENE	6 MKA
121		PACKING CASE,PAPER	
	LSPG0739	(A)	6 MKA
	LSPG0823	(B)	6 MKA
122		FAN BAG	
	LSQF0210	(A)	6 MKA
	LSQF0255	(B)	6 MKA
123	LSSQ0203	INFRARED REMOTE CONTROL	6 MKA
125	LSPN0159	TOP CUSHION RIGHT,STYROFOAM	6 MKA
126	LSPN0158	TOP CUSHION LEFT,STYROFOAM	6 MKA
131	LSPN0160	BOTTOM CUSHION FRONT,STYROFOAM	6 MKA
132	LSPN0161	BOTTOM CUSHION REAR,STYROFOAM	6 MKA
153	TMM77412	CLAMPER	5 MKA
157	TMM77409	PURSE LOCK CLAMPER	4 MKA
200	LKK683009A	PANEL LIGHT	4 MKA
253	TMM6425-1	CLAMPER	5 MKA
255	LSMX0143	SUPPORT PIECE	5 MKA
258	KL-250-19	PURSE LOCK CLAMPER	4 MKA

12.2.2. SCREWS AND WASHERS

Ref. No.	Part No.	Part Name& Description	Remarks
401	VHDS0475	SCREW,STEEL	1
405	VHDS0496	SCREW W/WASHER,STEEL	5
410	VHDS0498	SCREW W/WASHER,STEEL	1
414	VHNS0070	MAIN CAM PUSH NUT,STEEL	2
422	XWGV2D5G	WASHER,NYLON	2
424	XYC26+SF6J	SCREW W/WASHER,STEEL	1
426	TMM77532	CUSHION,RUBBER	4
430	XTV26+6FFZJ	TAPPING SCREW,STEEL	1
432	XTV3+8JR	TAPPING SCREW,STEEL	5
443	XTV4+12A	TAPPING SCREW,STEEL	4
445	LHT60001Y	SCREW W/WASHER,STEEL	4 MKA
446	XTV4+16A	TAPPING SCREW,STEEL	4 MKA
449	VHDS0493	TAPPING SCREW,STEEL	5
450	VHDS0309	SCREW,STEEL	5
460	XTN4+12A	TAPPING SCREW,STEEL	5
470	LSMX0135	CUT WASHER,NYLON	1
471	XSN26+5	SCREW,STEEL	1
472	XTN26+5FJ	TAPPING SCREW,STEEL	2
473	XYN26+C6	SCREW,W/WASHER,STEEL	2
474	LSHD0056	TAPPING SCREW,STEEL	1
475	XTV26+5FJ	TAPPING SCREW,STEEL	2

12.2.3. SERVICE FIXTURES AND TOOLS

Ref. No.	Part No.	Part Name& Description	Remarks
	VFMS0003H6	VHS ALIGNMENT TAPE	
	VFKS0081	GREASE	
	VFK0329	POST ADJUSTMENT DRIVER	
	VFK1301	SILICON GREASE	
	VFK27	HEAD CLEANING STICK	
	VFK0330	H-POSITION ADJUSTMENT DRIVER	

12.3. ELECTRICAL REPLACEMENT PARTS LIST

PRINTED CIRCUIT BOARD ASSEMBLY

Ref. No.	Part No.	Part Name& Description	Remarks
E1	VEPS3083D	TV/VCR MAIN C.B.A.	■ E.S.D. RTL MKA
E2	VEPS4034B	AUDIO C.B.A.	▲ E.S.D. RTL MKA
E134	VEPS3084C	TV PROCESS C.B.A.	▲ E.S.D. RTL MKA
E135	LRP63019B	VERTICAL C.B.A.	▲ RTL MKA
E12	LRP63017B	TV POWER C.B.A.	■ E.S.D. RTL MKA
E126	VEMS0331	CAPSTAN STATOR C.B.A. NR	■
E6	VEPS5035Z	Hi-Fi AUDIO/VIDEO HEAD AMP C.B.A.	■ RTL MKA
E17	LRP63005E	CRT C.B.A.	■ RTL MKA

12.3.1. TV/VCR MAIN C.B.A. ■

INTEGRATED CIRCUITS

Ref. No.	Part No.	Part Name& Description	Remarks
IC501	TLP621GR	IC, LINEAR OVER CURRENT DETECTOR	⚠ MKA
IC1001	0N3131-R.KT	IC, LINEAR ERROR V. DET	⚠
IC2601	AN3808K	IC, LINEAR CYLINDER MOTOR DRIVE	
IC3001	AN3479FBP-A	IC, LINEAR VIDEO/AUDIO PROCESS	
IC3101	NJM2235M	IC, BIPOLAR LINEAR VIDEO INPUT SW	
IC3201	MN3885S	IC, CCD 1H DELAY	E.S.D.
IC3301	LC8632165N41	IC, 8BIT MICROCONTROLLER	E.S.D. MKA
IC4501	LA4285	IC, BIPOLAR LINEAR AUDIO AMP	E.S.D. MKA
IC4511	LA4285	IC, BIPOLAR LINEAR AUDIO AMP	E.S.D. MKA
IC4701	LM833M	IC, LINEAR OP AMP	
	OR UPC4570G2-T1	IC, LINEAR OP AMP	
IC6001	D784928YG108	IC, 16BIT MICROCONTROLLER	E.S.D.
IC6002	SG-PK01	REEL SENSOR	
IC6003	SG-PK01	REEL SENSOR	
IC6004	KS24C011IS	IC, 1K EEPROM MEMORY	E.S.D.
	OR M24C01-MN6	IC, 1K EEPROM MEMORY	E.S.D.
IC6501	D750066-330	IC, 4BIT MICROCONTROLLER	E.S.D.
	OR D750068-356	IC, 4BIT MICROCONTROLLER	E.S.D.

TRANSISTORS

Ref. No.	Part No.	Part Name& Description	Remarks
Q501	2SC2482KT		MKA
Q551	2SD2539LBK		⚠ MKA
Q571	2SC2785(TH)		MKA
	OR 2SC2785(TJ)		MKA
	OR 2SC945A(TQ)		
Q581	2SA1321TPE6		MKA
	OR 2SA1767(Q)		MKA
	OR 2SB1221(Q)		MKA
Q801	2SC2785(TH)		MKA
	OR 2SC2785(TJ)		MKA
	OR 2SC945A(TQ)		
Q1001	2SC4130LF608		⚠
	OR 2SC4559LP.KT		⚠
Q1002	2SD2259		
Q1003	2SC4081T106R	CHIP	
	OR 2SD1819A(R,S)	CHIP	
Q1004	2SA1037K146R	CHIP	
	OR 2SB709A(R,S)	CHIP	
Q1005	2SA1576A106R	CHIP	
	OR 2SB1218ARS	CHIP	
Q1051	2SD2396(K)		
Q1052	2SC2412K1	CHIP	
	OR 2SD601(R,S)	CHIP	
Q1053	2SD2097TV2R	CHIP	
Q1057	2SA1175(TF)		MKA
	OR 2SA1175(TH)		MKA
	OR 2SA1175(TJ)		MKA
	OR 2SA1175(TK)		MKA
	OR 2SA564A(Q,R,S)		
	OR 2SA733(TK)		MKA
	OR 2SA733(TP)		MKA
	OR 2SA733(TQ)		MKA
Q1058	2SC2412K1	CHIP	
	OR 2SD601(R,S)	CHIP	
Q3001	2SA1037K146R	CHIP	
	OR 2SB709A	CHIP	
Q3002	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q3310	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q3311	2SA1037K146R	CHIP	
	OR 2SB709A	CHIP	
Q3314	HN1C01F(GR)	COMPLX CMP SI NPN CHIP	
	OR IMX1	COMPLX CMP SI NPN CHIP	
	OR XN4501	COMPLX CMP SI NPN CHIP	
Q3315	DTA124EK	CHIP	
	OR UN2112	CHIP	
Q4001	2SA1037K146R	CHIP	
	OR2SB709A	CHIP	
Q4002	2SD1819A(R,S)	CHIP	
	OR 2SD601(R,S)	CHIP	
Q4003	2SD1819A(R,S)	CHIP	
	OR 2SD601(R,S)	CHIP	
Q4101	2SC2412K1	CHIP	

Ref. No.	Part No.	Part Name& Description	Remarks
	OR 2SD601A	CHIP	
Q4154	DTC124EK	CHIP	
	OR UN2212	CHIP	
Q4171	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q4173	DTC144EK	CHIP	
	OR UN2213	CHIP	
Q4701	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q4702	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q6002	2SA1037K146R	CHIP	
	OR 2SB709A	CHIP	
Q6003	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q6004	2SA1037K146R	CHIP	
	OR 2SB709A	CHIP	
Q6005	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q6006	DTA143EK	CHIP	
	OR UN211L	CHIP	
Q6007	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q6009	VEKS5707	PHOTO SENSOR UNIT	
Q6010	VEKS5707	PHOTO SENSOR UNIT	
Q6301	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q6302	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q6303	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q7001	2SA1037K146R	CHIP	
	OR 2SB709A	CHIP	
Q7101	2SA1037K146R	CHIP	
	OR 2SB709A	CHIP	

DIODES

Ref. No.	Part No.	Part Name& Description	Remarks
D503	ERB43-04V		
	OR ES1V		
D505	MA165		
	OR 1SS119		
	OR 1SS133T		
D553	ERB43-04V		
	OR ES1V		
D554	MA167		
	OR 4148-TA		MKA
D558	ERB43-04V		
	OR ES1V		
D560	ERB44-04V		
D582	ERD07-15L26		
D591	TRPW5B0M050D	THERMISTOR	⚠
D806	MA167		
	OR 4148-TA		MKA
D807	ERC13-08		⚠ MKA
D808	ERC13-08		⚠ MKA
D809	ERC13-08		⚠ MKA
D810	ERC13-08		⚠ MKA
D811	ERZV10V361CS	SURGE ABSORBER 360	⚠ MKA
D882	ERZV10V361CS	SURGE ABSORBER 360	⚠ MKA
D1001	S1WBA60B		⚠
D1002	ERA18-04V3		
D1003	ERA18-04V3		
D1005	ERA18-04V3		
D1006	ERC30-01L3		
	OR RU3YXLFC1		
D1007	ERA18-04V3		
D1008	ERC81-004		
D1011	MA4051N-TAKT	ZENER 5.1V	
D1012	MA858		
	OR 1SS135T-77		
D1013	MA165		
	OR 1SS119		
	OR 1SS133T		
D1015	MA7180	ZENER 18V	⚠
D1016	MA165		
	OR 1SS119		
	OR 1SS133T		
D1051	MA4100N	ZENER 10V	
	OR RD10JSAB3	ZENER 10V	
D1052	MA165		
	OR 1SS119		
	OR 1SS133T		
D1053	MA165		
	OR 1SS119		
	OR 1SS133T		
D1056	ERA15-01V3		
	OR ERA15-01V5		
D1057	MA4300-H	ZENER 30V	
	OR MA4300-M	ZENER 30V	
D1058	MA4056-M	ZENER 5.6V	

Ref. No.	Part No.	Part Name& Description	Remarks
D4171	MA165		
	OR 1SS119		
	OR 1SS133T		
D4523	MA165		
	OR 1SS119		
	OR 1SS133T		
D4524	MA165		
	OR 1SS119		
	OR 1SS133T		
D4591	RD9.1EW	ZENER 9.1V	
D4701	MA4056-M	ZENER 5.6V	
D4702	VCYSARH101KB	CERAMIC 50V 100P	
D4703	VCYSARH101KB	CERAMIC 50V 100P	
D4705	VCYSARH101KB	CERAMIC 50V 100P	
D4708	MA111	CHIP	
D4710	MA111	CHIP	
D6001	VEKS5708	SENSOR LED UNIT	
D6002	MA165		
	OR 1SS119		
	OR 1SS133T		
D6003	MA165		
	OR 1SS119		
	OR 1SS133T		
D6201	MA165		
	OR 1SS119		
	OR 1SS133T		
D6202	MA165		
	OR 1SS119		
	OR 1SS133T		
D6301	SLP913C81HAB	LED RED	
D6302	SLP313C81HAB	LED GREEN	
D6303	SLP413C81HAB	LED ORANGE	MKA

RESISTORS

Ref. No.	Part No.	Part Name& Description	Remarks
R501	ERDS2TJ681	680	
R502	ERDS2TJ332	3.3K	
R505	ERDS2TJ561	560	
R511	ERG3FJ272H	METAL OXIDE 3W 2.7K	MKA
R513	ERG12SJ560P	METAL OXIDE 1/2W 56	MKA
R516	LAR05222J09	W FLMPRF 5W 2.2K	MKA
R552	ERDS2TJ103	10K	
R553	ERDS2TJ102	1K	
R554	ERDS2TJ822	8.2K	
R555	ERDS2TJ683	68K	
R556	ERDS2TJ563	56K	
R558	ERG2ANJ102H	METAL OXIDE 2W 1K	
R559	ERDS2TJ103	10K	
R561	ERQ2CJP2R0S	2W 2	⚠
R562	ERF5ZK2R2	W FLMPRF+-10% 5W 2.2	
R571	ERDS2TJ101	100	
R572	ERDS2TJ331	330	
R573	ERDS2TJ221	220	
R574	ERJ6GEYJ273V	MGF CHIP 1/10W 27K	
R581	ERDS1FJ1R5P	1/2W 1.5	⚠
R582	ERDS1FJ1R5P	1/2W 1.5	⚠
R583	ERDS1FJ1R2P	1/2W 1.2	⚠
R584	ERDS2TJ562	5.6K	
R585	ERDS2TJ473	47K	
R586	ERDS2TJ393	39K	
R591	ERF5ZJ121	W FLMPRF 5W 120	
R809	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R810	ERDS2TJ101	100	
R811	ERDS2TJ103	10K	
R812	VRESC2TK825T	SOLID+-10% 1/2W 8.2M	⚠
R815	ERDS2TJ223	22K	
R1003	VRESE2TJ334	1/2W 330K	
R1004	ERG2SJ333H	METAL OXIDE 2W 33K	
R1005	ERG1SJ680P	METAL OXIDE 1W 68	
R1006	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R1007	ERDS2TJ101	100	
R1008	ERDS2TJ392	3.9K	
R1010	ERD25FJ100P	10	⚠
	OR ERD25FPJ100P	10	⚠
	OR VRESF4FJ100P	10	⚠
	OR VRESS4FJ100E	10	⚠
R1011	ERD25FJ100P	10	⚠
	OR ERD25FPJ100P	10	⚠
	OR VRESF4FJ100P	10	⚠
	OR VRESS4FJ100E	10	⚠
R1014	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R1015	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R1016	ERJ8GEYJ562V	MGF CHIP 1/8W 5.6K	
R1017	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R1018	ERJ6GEYJ183V	MGF CHIP 1/10W 18K	
R1019	ERJ6GEYJ392V	MGF CHIP 1/10W 3.9K	
R1020	ERJ6GEYJ682V	MGF CHIP 1/10W 6.8K	
R1022	ERJ6GEYJ221V	MGF CHIP 1/10W 220	

Ref. No.	Part No.	Part Name& Description	Remarks
R1051	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R1052	ERDS2TJ153	15K	
R1053	ERDS2TJ153	15K	
R1057	ERDS2TJ331	330	
R1058	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R1068	ERDS2TJ182	1.8K	
R1069	ERDS2T0	0	●
R1070	ERJ6GEYJ154V	MGF CHIP 1/10W 150K	
R1071	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R1072	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R1073	ERDS1VJ202	1/2W 2K	
R1074	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R1075	ERDS1VJ202	1/2W 2K	
R2601	ERJ6GEYJ330V	MGF CHIP 1/10W 33	
R2602	ERJ6GEYJ330V	MGF CHIP 1/10W 33	
R2603	ERJ6GEYJ330V	MGF CHIP 1/10W 33	
R2604	ERDS2TJ1R0	1	
R2605	ERDS2TJ1R2	1.2	
R2606	ERDS2TJ561	560	
R3001	ERDS2TJ101	100	
R3006	ERDS2TJ101	100	
R3010	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R3016	ERJ6GEYJ121V	MGF CHIP 1/10W 120	
R3017	ERJ6GEYJ331V	MGF CHIP 1/10W 330	
R3024	ERJ6GEYJ391V	MGF CHIP 1/10W 390	
R3025	ERJ6GEYJ125V	MGF CHIP 1/10W 1.2M	
R3026	ERJ6GEYJ474V	MGF CHIP 1/10W 470K	
R3028	ERJ6GEYJ272V	MGF CHIP 1/10W 2.7K	
R3029	ERJ6GEYJ151V	MGF CHIP 1/10W 150	
R3032	ERJ6GEYJ122V	MGF CHIP 1/10W 1.2K	
R3035	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R3036	ERJ6GEYG102V	MGF CHIP+-2% 1/10W 1K	
R3037	ERJ6GEYG102V	MGF CHIP+-2% 1/10W 1K	
R3038	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R3077	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R3081	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R3082	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R3083	ERJ6GEYJ271V	MGF CHIP 1/10W 270	
R3084	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R3085	ERJ6GEYJ181V	MGF CHIP 1/10W 180	
R3091	ERJ6GEYJ750V	MGF CHIP 1/10W 75	
R3101	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R3102	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R3103	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R3302	ERJ6GEYJ394V	MGF CHIP 1/10W 390K	
R3303	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R3304	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R3305	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R3306	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R3307	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R3308	ERDS2TJ103	10K	
R3309	ERDS2TJ103	10K	
R3311	ERJ6GEYJ333V	MGF CHIP 1/10W 33K	
R3312	ERJ6GEYJ562V	MGF CHIP 1/10W 5.6K	

Ref. No.	Part No.	Part Name& Description	Remarks
R3313	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R3316	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R3317	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R3321	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R3325	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R3326	ERJ6GEYJ105V	MGF CHIP 1/10W 1M	
R3329	ERJ6GEYJ331V	MGF CHIP 1/10W 330	
R3330	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R3332	ERJ6GEYJ560V	MGF CHIP 1/10W 56	
R3336	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R3345	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R3352	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R3353	ERJ6GEYJ682V	MGF CHIP 1/10W 6.8K	
R3354	ERJ6GEYJ682V	MGF CHIP 1/10W 6.8K	
R3361	ERJ6GEYJ562V	MGF CHIP 1/10W 5.6K	
R3362	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R3363	ERJ6GEYJ562V	MGF CHIP 1/10W 5.6K	
R3366	ERJ6GEYJ182V	MGF CHIP 1/10W 1.8K	
R3375	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R3377	ERJ6GEYJ182V	MGF CHIP 1/10W 1.8K	
R3378	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R3379	ERJ6GEYJ272V	MGF CHIP 1/10W 2.7K	
R3380	ERJ6GEYJ182V	MGF CHIP 1/10W 1.8K	
R3381	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R3390	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R4001	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R4002	ERJ6GEYJ334V	MGF CHIP 1/10W 330K	
R4003	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R4004	ERJ6GEYJ333V	MGF CHIP 1/10W 33K	
R4005	ERJ6GEYJ225V	MGF CHIP 1/10W 2.2M	
R4006	ERJ6GEYJ681V	MGF CHIP 1/10W 680	
R4007	ERJ6GEYJ821V	MGF CHIP 1/10W 820	
R4008	ERJ6GEYJ273V	MGF CHIP 1/10W 27K	
R4009	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R4010	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R4011	ERJ6GEYJ682V	MGF CHIP 1/10W 6.8K	
R4012	ERJ6GEYJ682V	MGF CHIP 1/10W 6.8K	
R4014	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R4015	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R4018	ERJ6GEYJ682V	MGF CHIP 1/10W 6.8K	
R4031	ERJ6GEYJ333V	MGF CHIP 1/10W 33K	
R4032	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R4051	ERJ6GEYJ393V	MGF CHIP 1/10W 39K	
R4052	ERJ6GEYJ561V	MGF CHIP 1/10W 560	
R4101	ERJ6GEYJ563V	MGF CHIP 1/10W 56K	
R4102	ERJ6GEYJ184V	MGF CHIP 1/10W 180K	
R4103	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R4171	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R4172	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R4173	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R4174	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R4175	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R4502	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R4504	ERJ6GEYJ823V	MGF CHIP 1/10W 82K	

Ref. No.	Part No.	Part Name& Description	Remarks
R4509	ERDS2TJ100	10	
R4512	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R4514	ERJ6GEYJ823V	MGF CHIP 1/10W 82K	
R4519	ERDS2TJ100	10	
R4521	ERQ1ABJP2R2S	FUSE 1W 2.2	⚠ MKA
R4523	ERJ6GEY0R00V	MGF CHIP 1/10W 0	●
R4524	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R4591	ERDS2TJ681	680	
R4592	ERDS2TJ681	680	
R4593	ERDS2TJ681	680	
R4594	ERDS2TJ681	680	
R4701	ERJ6GEYJ561V	MGF CHIP 1/10W 560	
R4702	ERJ6GEYJ561V	MGF CHIP 1/10W 560	
R4703	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R4704	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R4705	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R4706	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R4707	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R4708	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R4709	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R4710	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6001	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R6002	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6005	ERJ6GEYJ682V	MGF CHIP 1/10W 6.8K	
R6006	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R6007	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R6008	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R6011	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6012	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6013	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6022	ERJ6GEY0R00V	MGF CHIP 1/10W 0	●
R6024	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R6025	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R6026	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6027	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R6028	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R6029	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6032	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6035	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6054	ERDS2TJ221	220	
R6055	ERDS2TJ221	220	
R6056	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6057	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R6058	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R6059	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6060	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6061	ERJ6GEYJ152V	MGF CHIP 1/10W 1.5K	
R6062	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6063	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6066	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6067	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6068	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6071	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	

Ref. No.	Part No.	Part Name& Description	Remarks
R6072	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6077	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6081	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6082	ERDS2TJ222	2.2K	
R6098	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6099	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6100	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6101	ERDS2TJ121	120	
R6102	ERDS2TJ151	150	
R6103	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R6104	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R6105	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R6106	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R6107	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R6108	ERDS2TJ681	680	
R6109	ERDS2TJ122	1.2K	
R6110	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R6111	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6113	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6114	ERJ6GEYJ152V	MGF CHIP 1/10W 1.5K	
R6120	ERDS2TJ560	56	
R6121	ERJ6GEYJ391V	MGF CHIP 1/10W 390	
R6122	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6123	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6124	ERJ6GEYJ475V	MGF CHIP 1/10W 4.7M	
R6125	ERJ6GEYJ332V	MGF CHIP 1/10W 3.3K	
R6126	ERJ6GEYJ182V	MGF CHIP 1/10W 1.8K	
R6127	ERJ6GEYJ563V	MGF CHIP 1/10W 56K	
R6128	ERDS2TJ221	220	
R6129	ERDS2TJ221	220	
R6130	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6150	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R6151	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R6152	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R6159	ERJ6GEYJ563V	MGF CHIP 1/10W 56K	
R6161	ERJ6GEYJ183V	MGF CHIP 1/10W 18K	
R6162	ERJ6GEYJ562V	MGF CHIP 1/10W 5.6K	
R6163	ERJ6GEYJ562V	MGF CHIP 1/10W 5.6K	
R6164	ERJ6GEYJ562V	MGF CHIP 1/10W 5.6K	
R6165	ERJ6GEYJ562V	MGF CHIP 1/10W 5.6K	
R6166	ERJ6GEYJ563V	MGF CHIP 1/10W 56K	
R6173	ERJ6GEYG332V	MGF CHIP+-2% 1/10W 3.3K	
R6174	ERDS2TG223	+-2% 22K	MKA
R6175	ERDS2TG273	+-2% 27K	MKA
R6176	ERDS2TJ103	10K	
R6177	ERDS2TJ103	10K	
R6178	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6179	ERJ6GEY0R00V	MGF CHIP 1/10W 0	●
R6181	ERJ6GEYJ563V	MGF CHIP 1/10W 56K	
R6183	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R6202	ERJ6GEYJ274V	MGF CHIP 1/10W 270K	
R6203	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6204	ERJ6GEYJ184V	MGF CHIP 1/10W 180K	
R6205	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	

Ref. No.	Part No.	Part Name& Description	Remarks
R6206	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R6209	ERJ6GEYJ152V	MGF CHIP 1/10W 1.5K	
R6210	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R6212	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R6213	ERJ6GEYG102V	MGF CHIP+-2% 1/10W 1K	
R6214	ERJ6GEYG102V	MGF CHIP+-2% 1/10W 1K	
R6216	ERJ6GEYJ274V	MGF CHIP 1/10W 270K	
R6217	ERJ6GEYJ184V	MGF CHIP 1/10W 180K	
R6301	ERJ6GEYJ182V	MGF CHIP 1/10W 1.8K	
R6302	ERJ6GEYJ392V	MGF CHIP 1/10W 3.9K	
R6303	ERJ6GEYJ182V	MGF CHIP 1/10W 1.8K	
R6304	ERJ6GEYJ392V	MGF CHIP 1/10W 3.9K	
R6305	ERJ6GEYJ182V	MGF CHIP 1/10W 1.8K	
R6307	ERJ6GEYJ182V	MGF CHIP 1/10W 1.8K	
R6308	ERJ6GEYJ392V	MGF CHIP 1/10W 3.9K	
R6314	ERDS2TJ560	56	
R6315	ERJ6GEYJ182V	MGF CHIP 1/10W 1.8K	
R6316	ERJ6GEYJ182V	MGF CHIP 1/10W 1.8K	
R6317	ERJ6GEYJ182V	MGF CHIP 1/10W 1.8K	
R6503	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6506	ERDS2TJ102	1K	
R6507	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6508	ERDS2TJ102	1K	
R6509	ERDS2TJ102	1K	
R6511	ERDS2TJ102	1K	
R6512	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6513	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6514	ERDS2TJ102	1K	
R6515	ERDS2TJ103	10K	
R6516	ERDS2TJ103	10K	
R6517	ERDS2TJ103	10K	
R6518	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6522	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R6523	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R6524	ERDS2TJ102	1K	
R6525	ERDS2TJ102	1K	
R6526	ERDS2TJ103	10K	
R6527	ERDS2TJ103	10K	
R6528	ERJ6GEY0R00V	MGF CHIP 1/10W 0	●
R6529	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6530	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6531	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R6532	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6533	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6534	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R6535	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R6536	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R6537	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R6538	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R6539	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R6540	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6541	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6550	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R6552	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	

Ref. No.	Part No.	Part Name& Description	Remarks
R6553	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R6554	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R6555	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R6556	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R6557	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R6558	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R6559	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R6560	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R7001	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R7002	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R7003	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R7004	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R7005	ERJ6GEY0R00V	MGF CHIP 1/10W 0	●
R7006	ERJ6GEYJ271V	MGF CHIP 1/10W 270	
R7007	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R7008	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R7101	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R7102	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R7103	ERJ6GEY0R00V	MGF CHIP 1/10W 0	●
R7104	ERJ6GEYJ271V	MGF CHIP 1/10W 270	
R7105	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	

CAPACITORS

Ref. No.	Part No.	Part Name& Description	Remarks
C501	ECQB1H473KM	POLYESTER 50V 0.047	MKA
C510	ECKW2H681KB5	CERAMIC 500V 680P	
C513	ECA1HM100B	ELECTROLYTIC 50V 10	
C524	ECKC3D471KBP	CERAMIC 2KV 470P	⚠
C531	ECA1HM3R3B	ELECTROLYTIC 50V 3.3	MKA
C552	ECA1EM471E	ELECTROLYTIC 25V 470	
C553	ECKW2H221KB5	CERAMIC 500V 220P	
C554	ECWH12H682JS	POLYESTER+-5% 1200V 6800P	⚠
C556	ECWF2564JBP	POLYESTER+-5% 250V 0.64	⚠
	OR ECWF2564JSB	POLYESTER+-5% 250V 0.64	⚠
C558	ECA1VM101B	ELECTROLYTIC 35V 100	
C560	ECA2EM100E	ELECTROLYTIC 250V 10	⚠ MKA
C561	ECA2CM4R7B	ELECTROLYTIC 160V 4.7	
C563	ECEA180V33	ELECTROLYTIC 180V 33	
C571	ECA1HM3R3B	ELECTROLYTIC 50V 3.3	MKA
C573	ECKW2H122KB5	CERAMIC 500V 1200P	
C581	ECWH12H622JS	POLYESTER+-5% 1.2KV 6200P	⚠ MKA
C801	ECKM2H472PE7	CERAMIC+100%-0% 500V 4700P	
C802	ECKM2H472PE7	CERAMIC+100%-0% 500V 4700P	
C803	ECKM2H472PE7	CERAMIC+100%-0% 500V 4700P	
C804	ECKM2H472PE7	CERAMIC+100%-0% 500V 4700P	
C808	ECQU2A823MLA	POLYESTER+-20% 250V 0.082	⚠ MKA
C809	VSQ1003-F	ARRESTER	⚠ MKA
C810	VCKSFKK102MX	CERAMIC+-20% 125V 1000P	⚠
C1001	ECKATS103MF	CERAMIC+-20% 250V 0.01	⚠
	OR ECKETS103MF	CERAMIC+-20% 250V 0.01	⚠
	OR VCKSEKD103PZ	CERAMIC+100%-0% 125V 0.01	⚠

Ref. No.	Part No.	Part Name& Description	Remarks
	OR VCKSEMD103PZ	CERAMIC+100%-0% 125V 0.01	⚠
	OR VCKST3G103MY	CERAMIC+-20% 125V 0.01	⚠
	OR VCKSU3D103MY	CERAMIC+-20% 125V 0.01	⚠
C1002	ECKATS332ME8	CERAMIC+-20% 250V 3300P	⚠ MKA
	OR ECKDNB332ME8	CERAMIC+-20% 125V 3300P	⚠
	OR ECKETS332ME8	CERAMIC+-20% 250V 3300P	⚠
	OR VCKSEKD332MY	CERAMIC+-20% 125V 3300P	⚠
	OR VCKSEVD332MY	CERAMIC+-20% 125V 3300P	⚠
	OR VCKST3G332MX	CERAMIC+-20% 125V 3300P	⚠
	OR VCKSU3D332MX	CERAMIC+-20% 125V 3300P	⚠
C1003	VCKSFKK102MX	CERAMIC+-20% 125V 1000P	⚠
C1004	VCESAU2D221	ELECTROLYTIC 200V 220	⚠ MKA
	OR VCESAX2D221	ELECTROLYTIC 200V 220	⚠
C1005	ECA2DHG4R7B	ELECTROLYTIC 200V 4.7	
C1006	ECKW2H221KB5	CERAMIC 500V 220P	
C1007	VCYSBRC104MX	CERAMIC+-20% 16V 0.1	
C1009	ECQB1H103JF	POLYESTER+-5% 50V 0.01	
C1010	ECUV1H101JCN	C CHIP+-5% 50V 100P	
C1011	ECA1HHG4R7B	ELECTROLYTIC 50V 4.7	
C1012	ECEA1PEE331	ELECTROLYTIC 18V 330	
C1013	ECA1EM331B	ELECTROLYTIC 25V 330	
C1014	ECEA1HGE470	ELECTROLYTIC 50V 47	
C1016	ECEA1PEE331	ELECTROLYTIC 18V 330	
C1017	ECA0JM102B	ELECTROLYTIC 6.3V 1000	
C1018	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C1021	EEUGA1H1R0B	ELECTROLYTIC 50V 1	
C1025	VCKSFKK102MX	CERAMIC+-20% 125V 1000P	⚠
	OR VCKSFMK102MX	CERAMIC+-20% 125V 1000P	⚠
	OR VCKSFVK102MX	CERAMIC+-20% 125V 1000P	⚠
C1028	ECEA1PEE331	ELECTROLYTIC 18V 330	
C1030	VCYSBRE183KX	CERAMIC 25V 0.018	
C1051	ECEA1HKAR47	ELECTROLYTIC 50V 0.47	
C1052	ECEA1CKA100	ELECTROLYTIC 16V 10	
C1058	ECEA0JEE101	ELECTROLYTIC 6.3V 100	
C1059	ECEA1CKA470	ELECTROLYTIC 16V 47	
C1063	ECA1CM101B	ELECTROLYTIC 16V 100	
C2604	ECUV1E104KBN	C CHIP 25V 0.1	
C2605	ECUV1E104KBN	C CHIP 25V 0.1	
C2606	ECUV1E104KBN	C CHIP 25V 0.1	
C2607	ECUV1E104KBN	C CHIP 25V 0.1	
C2608	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C2609	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C2610	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C2611	ECUV1H103KBN	C CHIP 50V 0.01	
C2612	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C2613	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7	
C2614	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7	
C2615	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7	
C3001	ECUV1H103KBN	C CHIP 50V 0.01	
C3002	ECUV1H020CCN	C CHIP+-0.25P 50V 2P	
C3003	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C3004	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C3006	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	

Ref. No.	Part No.	Part Name& Description	Remarks
C3007	ECEA0JKA221	ELECTROLYTIC 6.3V 220	
C3008	ECUV1H181JCN	C CHIP+-5% 50V 180P	
C3009	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7	
C3010	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C3013	ECUV1C224ZFN	C CHIP+80%-20% 16V 0.22	
C3015	ECEA0JKA470	ELECTROLYTIC 6.3V 47	
C3016	ECEA1CKS100	ELECTROLYTIC 16V 10	
C3018	ECEA0JKA101	ELECTROLYTIC 6.3V 100	
C3019	ECEA1HKA2R2	ELECTROLYTIC 50V 2.2	
C3020	ECEA1CKA220	ELECTROLYTIC 16V 22	
C3021	ECEA1HKA2R2	ELECTROLYTIC 50V 2.2	
C3022	ECUV1C224ZFN	C CHIP+80%-20% 16V 0.22	
C3023	ECUV1H680JCN	C CHIP+-5% 50V 68P	
C3024	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C3025	ECUV1C104KBN	C CHIP 16V 0.1	
C3026	ECUV1H822KBN	C CHIP 50V 8200P	
C3027	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C3030	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C3031	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C3032	ECUV1C474ZFN	C CHIP+80%-20% 16V 0.47	
C3034	ECUV1H181JCN	C CHIP+-5% 50V 180P	
C3035	ECUV1H330JCN	C CHIP+-5% 50V 33P	
C3036	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C3037	ECEA0JKA101	ELECTROLYTIC 6.3V 100	
C3038	ECEA1CKA100	ELECTROLYTIC 16V 10	
C3041	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C3043	ECUV1H392KBN	C CHIP 50V 3900P	
C3044	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C3045	ECEA1HKAR47	ELECTROLYTIC 50V 0.47	
C3046	ECEA1HKA2R2	ELECTROLYTIC 50V 2.2	
C3047	ECEA0JKA221	ELECTROLYTIC 6.3V 220	
C3048	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C3050	ECEA1HKA2R2	ELECTROLYTIC 50V 2.2	
C3054	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C3055	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C3056	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C3057	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C3058	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C3060	ECEA1CKA100	ELECTROLYTIC 16V 10	
C3081	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C3082	ECUV1H332KBN	C CHIP 50V 3300P	
C3083	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C3101	ECEA0JKA101	ELECTROLYTIC 6.3V 100	
C3102	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C3103	ECEA1CKA100	ELECTROLYTIC 16V 10	
C3104	ECUV1H220JCN	C CHIP+-5% 50V 22P	
C3105	ECEA1CKA100	ELECTROLYTIC 16V 10	
C3106	ECEA1CKA100	ELECTROLYTIC 16V 10	
C3231	ECEA1HKA010	ELECTROLYTIC 50V 1	
C3232	ECUV1H102KBN	C CHIP 50V 1000P	
C3234	ECEA0JKA470	ELECTROLYTIC 6.3V 47	
C3235	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C3236	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C3237	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	

Ref. No.	Part No.	Part Name& Description	Remarks
C3301	ECUV1H220JCN	C CHIP+-5% 50V 22P	
C3302	ECUV1H180JCN	C CHIP+-5% 50V 18P	
C3303	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C3304	ECEA0JKA221	ELECTROLYTIC 6.3V 220	
C3308	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C3309	ECEA1HKS010	ELECTROLYTIC 50V 1	
C3310	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C3311	ECUV1H333KBN	C CHIP 50V 0.033	
C3312	ECUV1H102KBN	C CHIP 50V 1000P	
C3313	ECEA1HKA2R2	ELECTROLYTIC 50V 2.2	
C3314	ECEA1HKA2R2	ELECTROLYTIC 50V 2.2	
C3326	ECEA1CKA100	ELECTROLYTIC 16V 10	
C3335	ECEA0JKA101	ELECTROLYTIC 6.3V 100	
C3367	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7	
C4001	ECUV1C224ZFN	C CHIP+80%-20% 16V 0.22	
C4002	ECEA1HKS010	ELECTROLYTIC 50V 1	
C4003	ECUV1H272KBN	C CHIP 50V 2700P	
C4004	ECUV1H103KBN	C CHIP 50V 0.01	
C4005	ECEA0JKS220	ELECTROLYTIC 6.3V 22	
C4006	ECUV1H102KBN	C CHIP 50V 1000P	
C4007	ECEA0JKA220	ELECTROLYTIC 6.3V 22	
C4008	ECEA0JKA470	ELECTROLYTIC 6.3V 47	
C4009	ECEA1CKA100	ELECTROLYTIC 16V 10	
C4010	ECUV1E333KBN	C CHIP 25V 0.033	
C4011	ECUV1H103KBN	C CHIP 50V 0.01	
C4012	ECEA1HKA010	ELECTROLYTIC 50V 1	
C4013	ECEA0JKA470	ELECTROLYTIC 6.3V 47	
C4014	ECEA1HKA010	ELECTROLYTIC 50V 1	
C4051	ECUV1E333KBN	C CHIP 25V 0.033	
C4102	ECQB1562JF	POLYESTER+-5% 100V 5600P	
C4103	ECUV1H103KBN	C CHIP 50V 0.01	
C4104	ECUV1H103KBN	C CHIP 50V 0.01	
C4105	ECEA1CKA220	ELECTROLYTIC 16V 22	
C4171	ECEA1HKA010	ELECTROLYTIC 50V 1	
C4502	ECEA1CKA100	ELECTROLYTIC 16V 10	
C4504	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7	
C4506	ECEA1CKA470	ELECTROLYTIC 16V 47	
C4508	ECA1CM221B	ELECTROLYTIC 16V 220	
C4509	ECUV1H473KBN	C CHIP 50V 0.047	
C4512	ECEA1CKA100	ELECTROLYTIC 16V 10	
C4514	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7	
C4516	ECEA1CKA470	ELECTROLYTIC 16V 47	
C4518	ECA1CM221B	ELECTROLYTIC 16V 220	
C4519	ECUV1H473KBN	C CHIP 50V 0.047	
C4521	ECA1EM102B	ELECTROLYTIC 25V 1000	MKA
C4524	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C4525	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C4701	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C4702	ECEA1HKA010	ELECTROLYTIC 50V 1	
C4703	ECEA1HKA010	ELECTROLYTIC 50V 1	
C4704	ECEA1HKA010	ELECTROLYTIC 50V 1	
C4705	ECEA1HKA010	ELECTROLYTIC 50V 1	
C4706	ECA1CM471B	ELECTROLITIC 16V 470	
C6001	ECA0JM102B	ELECTROLYTIC 6.3V 1000	

Ref. No.	Part No.	Part Name& Description	Remarks
C6004	ECEA0JKA101	ELECTROLYTIC 6.3V 100	
C6005	ECUV1H103KBN	C CHIP 50V 0.01	
C6009	ECEA0JKA470	ELECTROLYTIC 6.3V 47	
C6011	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C6012	ECUV1H180JCN	C CHIP+-5% 50V 18P	
C6013	ECUV1H150GCN	C CHIP+-2% 50V 15P	
C6014	ECUV1H020CCN	C CHIP+-0.25P 50V 2P	
C6015	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C6016	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C6017	ECUV1H101JCN	C CHIP+-5% 50V 100P	
C6018	ECUV1H101JCN	C CHIP+-5% 50V 100P	
C6019	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C6022	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C6029	ECUV1H102KBN	C CHIP 50V 1000P	
C6030	ECUV1H102KBN	C CHIP 50V 1000P	
C6035	ECEA1CKS100	ELECTROLYTIC 16V 10	
C6061	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C6100	ECUV1H104ZFN	C CHIP+80%-20% 50V 0.1	
C6201	ECUV1H102KBN	C CHIP 50V 1000P	
C6203	ECUV1H103KBN	C CHIP 50V 0.01	
C6206	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C6207	ECUV1H680JCN	C CHIP+-5% 50V 68P	
C6208	ECUV1E104KBN	C CHIP 25V 0.1	
C6209	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C6211	ECEA0JKS470	ELECTROLYTIC 6.3V 47	
C6212	ECUV1H100CCN	C CHIP+-0.25P 50V 10P	
C6213	ECUV1H272KBN	C CHIP 50V 2700P	
C6214	ECUV1H102KBN	C CHIP 50V 1000P	
C6218	ECEA0JKS101	ELECTROLYTIC 6.3V 100	
C6219	ECEA1EKS4R7	ELECTROLYTIC 25V 4.7	
C6220	ECUV1H103KBN	C CHIP 50V 0.01	
C6223	ECUV1E104KBN	C CHIP 25V 0.1	
C6235	ECEA0JKA221	ELECTROLYTIC 6.3V 220	
C6301	ECEA0JKA470	ELECTROLYTIC 6.3V 47	
C6302	ECUV1H104ZFN	C CHIP+80%-20% 50V 0.1	
C6502	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C6503	ECEA0JKA101	ELECTROLYTIC 6.3V 100	
C6504	ECUV1H104ZFN	C CHIP+80%-20% 50V 0.1	
C7002	ECUV1H102KBN	C CHIP 50V 1000P	
C7006	ECA0JM102B	ELECTROLYTIC 6.3V 1000	
C7008	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C7010	ECEA1CKA100	ELECTROLYTIC 16V 10	
C7011	ECUV1H222KBN	C CHIP 50V 2200P	
C7012	ECUV1H222KBN	C CHIP 50V 2200P	
C7101	ECA0JM102B	ELECTROLYTIC 6.3V 1000	
C7104	ECUV1H330JCN	C CHIP+-5% 50V 33P	
C7107	ECEA1CKA100	ELECTROLYTIC 16V 10	

FILTERS

Ref. No.	Part No.	Part Name& Description	Remarks
FL4051	VLFS0014		

COILS

Ref. No.	Part No.	Part Name& Description	Remarks
L501	LLH6602T	HORIZONTAL LINEAR COIL	⚠ MKA
L803	ELF18D650B	LINE FILTER 2.4A 3.3M	⚠
L1001	ELF15N005AB	LINE FILTER 0.5A 18M	⚠
L1002	VLQSAB7D220K	22	
L1003	VLQSAB7D100K	10	
L1006	VLPS0083		
L3001	VLQSH02R390K	39	
L3002	ELESN470KA	47	
L3005	VLQSH02R330K	33	
L3010	ELESN270KA	27	
L3101	ELESN101KA	100	
L3231	ELESN221KA	220	
L3303	VLPS0111	CHIP BEAD INDUCTOR	MKA
L3304	VLPS0111	CHIP BEAD INDUCTOR	MKA
L3305	VLPS0111	CHIP BEAD INDUCTOR	MKA
L4001	VLQSU06R153K	15M	
L4002	ELESN101KA	100	
L4004	VLQSH02R100K	10	
L4101	ELESN471KA	470	
L4701	ELEXT101KE04	100	
L4702	ERJ6GEY0R00V	MGF CHIP 1/10W 0	●
L4703	BK2125HM102	FERRITE CORE 1K	
L4704	ERJ6GEY0R00V	MGF CHIP 1/10W 0	●
L6002	ELEXT101KE04	100	
L7002	VLQSAB7D100K	10	
L7101	VLQSAB7D100K	10	

CRYSTAL OSCILLATOR

Ref. No.	Part No.	Part Name& Description	Remarks
X3001	VSXS0195		
X3301	VSXS0238		MKA
X6001	VSXS0784		MKA
X6501	EF0GC4004T4		

PIN HEADERS

Ref. No.	Part No.	Part Name& Description	Remarks
P552	VJSS0898	4P WIRE TRAP	MKA
P803	VEKS5731	CONNECTOR ASS'Y	MKA
P805	VEKS5753	CONNECTOR ASS'Y	
P1001	VJPS0303	CONNECTOR 2P	
P3001	VJPS0885	CONNECTOR 20P	
P4001	VJSS0888	FE CONNECTOR 2P	
P4591	VJPS0274	CONNECTOR 4P	
P6201	LSJP0089	CONNECTOR 12P	
P6202	LSJP0088	CONNECTOR 12P	

SWITCHES

Ref. No.	Part No.	Part Name& Description	Remarks
SW6001	LSSH0002	LEAF SWITCH-SAFETY TAB	
SW6002	LSSS0008	MODE SWITCH	MKA
SW6301	EVQ21405R	PUSH SWITCH	
SW6302	EVQ21405R	PUSH SWITCH	
SW6303	EVQ21405R	PUSH SWITCH	
SW6304	EVQ21405R	PUSH SWITCH	
SW6305	EVQ21405R	PUSH SWITCH	
SW6306	EVQ21405R	PUSH SWITCH	
SW6307	EVQ21405R	PUSH SWITCH	
SW6308	EVQ21405R	PUSH SWITCH	
SW6310	EVQ21405R	PUSH SWITCH	
SW6311	EVQ21405R	PUSH SWITCH	
SW6312	EVQ21405R	PUSH SWITCH	

FUSE& PROTECTOR

Ref. No.	Part No.	Part Name& Description	Remarks
F801	XBA1F40NU100	FUSE 125V 4A	⚠
F1001	VSFS0003A16	FUSE 125V 1.6A	⚠
	OR VSFS0028A16	FUSE 125V 1.6A	⚠
	OR XBA1C16NU100	FUSE 125V 1.6A	⚠
PR1001	ICP-N38-TP1	IC PROTECTOR 1.5A	⚠
	OR UNH000600A	IC PROTECTOR 1.5A	⚠
PR1003	ICP-F25-1	IC PROTECTOR 1.0A	⚠ MKA
	OR UN11010	IC PROTECTOR 1.0A	⚠ MKA
PR1004	ICP-F25-1	IC PROTECTOR 1.0A	⚠ MKA
	OR UN11010	IC PROTECTOR 1.0A	⚠ MKA
PR1005	ICP-F25-1	IC PROTECTOR 1.0A	⚠ MKA
	OR UN11010	IC PROTECTOR 1.0A	⚠ MKA

RELAY

Ref. No.	Part No.	Part Name& Description	Remarks
RL801	TSEH0005	RELAY,120V	⚠
	OR TSEH0013	RELAY	⚠
	OR TSEH0019	RELAY	⚠

TRANSFORMER

Ref. No.	Part No.	Part Name& Description	Remarks
T501	ETH19Y70AY		
T502	ETE16Z37AY		⚠
T551	KFT4AB285F		⚠
T1001	ETS28AD1F5AC		⚠
T4101	VLTS0367		MKA

MISCELLANEOUS

Ref. No.	Part No.	Part Name& Description	Remarks
JK4591	LJP28015A	EARPHONE JACK SOCKET	MKA
JK4701	LJP68004A	FRONT AUDIO/VIDEO JACK SOCKET	MKA
JK4702	LJP68007A	AUDIO JACK SOCKET	MKA

PRINTED CIRCUIT BOARD ASSEMBLY

Ref. No.	Part No.	Part Name& Description	Remarks
E2	VEPS4034B	AUDIO C.B.A.	▲ MKA
E134	VEPS3084C	TV PROCESS C.B.A.	▲ MKA
E135	LRP63019B	VERTICAL C.B.A.	▲ MKA

MISCELLANEOUS

Ref. No.	Part No.	Part Name& Description	Remarks
E21	ENG36703G	TUNER 1,UHF/VHF NR	
E22	LFX6106A	AC CORD W/PLUG,125V	⚠ MKA
	OR LSJA0256	AC CORD W/PLUG,125V	⚠ MKA
E23	EYF52BC	FUSE HOLDER	
E27	TSOP1837UH1	INFRARED RECEIVER UNIT	MKA
E30	VMTS0035	CUSHION,RUBBER	
E43	TUC77628	HEAT SINK	MKA
E44	LML69001A	ANODE LEAD CLAMPER	MKA
E46	XTV3+10G	TAPPING SCREW,STEEL	
E48	XYN3+F10S	SCREW W/WASHER,STEEL	
E51	TJC6319	FUSE HOLDER	
E55	XNG3	NUT,STEEL	
E108	VMFS0136	SHEET,NYLON+RAYON	
E113	VEKS5712	FM RADIO ANTENNA CORD,0V	MKA
E136	LSSC0348	SHIELD PLATE,STEEL	MKA
E137	VSCS1072	HEAT SINK	
E138	XYN3+F8S	SCREW W/WASHER,STEEL	
E147	LSMB0226	FM ANTENNA	MKA
E148	LSGF0037	BARRIER	MKA
E150	ENG36704G	TUNER 2,UHF/VHF NR	
E151	T3A1301	GROUNDING STRAP	
E152	VEKS5755	GROUNDING WIRE	MKA
E153	LSZC0001	SHEET,CU	MKA

12.3.2. AUDIO C.B.A. ▲

INTEGRATED CIRCUITS

Ref. No.	Part No.	Part Name& Description	Remarks
IC4201	AN3962FB-V	IC, LINEAR Hi-Fi AUDIO PROCESS	
IC4271	UPC4574G2-T1	IC, LINEAR OP AMP	MKA
IC4301	BU4052BCF	IC, CMOS STANDARD LOGIC INPUT SELECT	E.S.D. MKA
	OR CD4052BCM	IC, CMOS STANDARD LOGIC INPUT SELECT	E.S.D.
IC4302	LM833M	IC, LINEAR OP AMP	
	OR UPC4570G2-T1	IC, LINEAR OP AMP	
IC4303	BU4052BCF	IC, CMOS STANDARD LOGIC INPUT SELECT	E.S.D. MKA
	OR CD4052BCM	IC, CMOS STANDARD LOGIC INPUT SELECT	E.S.D.
IC9001	CXA2064M	IC, LINEAR MTS/SAP SIGNAL PROCESS	MKA
IC9002	LM833M	IC, LINEAR OP AMP	
	OR UPC4570G2-T1	IC, LINEAR OP AMP	
IC9101	CXA2064M	IC, LINEAR MTS/SAP SIGNAL PROCESS	MKA
IC9201	AN7420-NT	IC, LINEAR FM SIGNAL PROCESS	MKA

TRANSISTORS

Ref. No.	Part No.	Part Name& Description	Remarks
Q9001	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q9002	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q9101	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q9102	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	

DIODES

Ref. No.	Part No.	Part Name& Description	Remarks
D4281	MA111	CHIP	
D4282	MA111	CHIP	
D4283	MA111	CHIP	
D4284	MA111	CHIP	
D4285	MA4051-M	ZENER 5.1V	
D9001	MA165		
	OR 1SS119		
	OR 1SS133T		
D9101	MA165		
	OR 1SS119		
	OR 1SS133T		

RESISTORS

Ref. No.	Part No.	Part Name& Description	Remarks
R4201	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R4202	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R4203	ERJ6GEYJ511V	MGF CHIP 1/10W 510	
R4204	ERJ6GEYJ511V	MGF CHIP 1/10W 510	
R4205	ERDS2TJ393	39K	
R4206	ERJ6GEYJ393V	MGF CHIP 1/10W 39K	
R4207	ERJ6GEYJ183V	MGF CHIP 1/10W 18K	
R4208	ERJ6GEYJ183V	MGF CHIP 1/10W 18K	
R4209	ERJ6GEY0R00V	MGF CHIP 1/10W 0	●
R4210	ERA6YEB153V	MGF CHIP+-0.1% 1/10W 15K	
R4211	ERJ6GEYJ152V	MGF CHIP 1/10W1.5K	
R4212	ERJ6GEYJ152V	MGF CHIP 1/10W 1.5K	
R4213	ERJ6GEYJ123V	MGF CHIP 1/10W 12K	
R4214	ERJ6GEY0R00V	MGF CHIP 1/10W 0	●
R4215	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R4216	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R4217	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R4218	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R4219	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R4220	ERJ6GEYJ333V	MGF CHIP 1/10W 33K	
R4221	ERJ6GEYJ333V	MGF CHIP 1/10W 33K	
R4222	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R4223	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	

Ref. No.	Part No.	Part Name& Description	Remarks
R4271	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R4272	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R4274	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R4275	ERJ6GEYJ273V	MGF CHIP 1/10W 27K	
R4276	ERJ6GEYJ332V	MGF CHIP 1/10W 3.3K	
R4277	ERJ6GEYJ122V	MGF CHIP 1/10W 1.2K	
R4278	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R4279	ERJ6GEYJ273V	MGFCHIP 1/10W 27K	
R4280	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R4281	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R4282	ERJ6GEYJ122V	MGF CHIP 1/10W 1.2K	
R4283	ERJ6GEYJ332V	MGF CHIP 1/10W 3.3K	
R4284	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R4285	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R4286	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R4287	ERJ6GEYJ561V	MGF CHIP 1/10W 560	
R4288	ERJ6GEYJ393V	MGF CHIP 1/10W 39K	
R4289	ERJ6GEYJ561V	MGF CHIP 1/10W 560	
R4290	ERJ6GEYJ393V	MGF CHIP 1/10W 39K	
R4292	ERJ6GEYJ471V	MGF CHIP 1/10W 470	
R4293	ERJ6GEYJ471V	MGF CHIP 1/10W 470	
R4294	ERDS2TJ271	270	
R4301	ELESN101KA	100	
R4302	ELESN101KA	100	
R4303	ERDS2TJ333	33K	
R4304	ERJ6GEYJ333V	MGF CHIP 1/10W 33K	
R4305	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R4306	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R4307	ERJ6GEYJ183V	MGF CHIP 1/10W 18K	
R4308	ERJ6GEYJ183V	MGF CHIP 1/10W 18K	
R4309	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R4310	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R4311	ERJ6GEY0R00V	MGF CHIP 1/10W 0	●
R4312	ERJ6GEY0R00V	MGF CHIP 1/10W 0	●
R9001	EVNCYAA03B14	VARIABLE 10K	
R9002	ERJ6GEYG683V	MGF CHIP+-2% 1/10W 68K	
R9003	EVNDCAA03B14	VARIABLE 10K	
R9004	ERJ6GEYJ122V	MGF CHIP 1/10W 1.2K	
R9005	ERJ6GEYJ105V	MGF CHIP 1/10W 1M	
R9006	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R9007	ERJ6GEYJ392V	MGF CHIP 1/10W 3.9K	
R9008	EVMAASA00B53	VARIABLE 5K	
R9009	ERJ6GEYJ332V	MGF CHIP 1/10W 3.3K	
R9010	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R9011	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R9012	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R9014	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R9016	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R9017	ERJ6GEYJ821V	MGF CHIP 1/10W 820	
R9018	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R9019	ERDS2TJ151	150	
R9020	ERDS2TJ151	150	
R9101	EVNCYAA03B14	VARIABLE 10K	

Ref. No.	Part No.	Part Name& Description	Remarks
R9102	ERJ6GEYG683V	MGF CHIP+-2% 1/10W 68K	
R9103	EVNDCAA03B14	VARIABLE 10K	
R9104	ERJ6GEYJ182V	MGF CHIP 1/10W 1.8K	
R9105	ERJ6GEYJ105V	MGF CHIP 1/10W 1M	
R9106	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R9107	ERJ6GEYJ392V	MGF CHIP 1/10W 3.9K	
R9108	EVMAASA00B53	VARIABLE 5K	
R9109	ERJ6GEYJ332V	MGF CHIP 1/10W 3.3K	
R9110	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R9111	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R9112	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R9113	ERJ6GEYJ333V	MGFCHIP 1/10W 33K	
R9114	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R9115	ERJ6GEYJ333V	MGF CHIP 1/10W 33K	
R9116	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R9117	ERJ6GEYJ821V	MGF CHIP 1/10W 820	
R9118	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R9201	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R9202	ERDS2TJ103	10K	
R9203	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R9204	ERJ6GEYJ224V	MGF CHIP 1/10W 220K	
R9205	ERJ6GEYJ332V	MGF CHIP 1/10W 3.3K	
R9206	EVMAASA00B53	VARIABLE 5K	
R9207	ERJ6GEYJ332V	MGF CHIP 1/10W 3.3K	
R9208	ERJ6GEYJ392V	MGF CHIP 1/10W 3.9K	
R9209	ERJ6GEYJ272V	MGF CHIP 1/10W 2.7K	
R9210	ERJ6GEY0R00V	MGF CHIP 1/10W 0	●
R9211	ERJ6GEY0R00V	MGF CHIP 1/10W 0	●
R9212	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R9213	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	

CAPACITORS

Ref. No.	Part No.	Part Name& Description	Remarks
C4201	ECEA1CKA100	ELECTROLYTIC 16V 10	
C4202	ECEA1HKA010	ELECTROLYTIC 50V 1	
C4203	ECEA1HKA010	ELECTROLYTIC 50V 1	
C4204	ECEA1HKA010	ELECTROLYTIC 50V 1	
C4205	ECEA1HKA010	ELECTROLYTIC 50V 1	
C4208	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C4209	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C4210	ECEA0JKA330	ELECTROLYTIC 6.3V 33	
C4211	ECEA0JKA330	ELECTROLYTIC 6.3V 33	
C4212	ECUV1H473KBN	C CHIP 50V 0.047	
C4213	ECUV1H473KBN	C CHIP 50V 0.047	
C4214	ECEA1HKA2R2	ELECTROLYTIC 50V 2.2	
C4215	ECEA1HKA2R2	ELECTROLYTIC 50V 2.2	
C4216	ECEA0JKA101	ELECTROLYTIC 6.3V 100	
C4217	ECEA0JKA101	ELECTROLYTIC 6.3V 100	
C4218	ECUV1H153KBN	C CHIP 50V 0.015	
C4219	ECUV1H153KBN	C CHIP 50V 0.015	
C4220	ECUV1H103KBN	C CHIP 50V 0.01	
C4221	ECUV1H103KBN	C CHIP 50V 0.01	
C4223	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C4224	ECUV1C224ZFN	C CHIP+80%-20% 16V 0.22	
C4225	ECEA1HKA010	ELECTROLYTIC 50V 1	
C4226	ECEA1CKA100	ELECTROLYTIC 16V 10	
C4227	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C4228	ECEA0JKA470	ELECTROLYTIC 6.3V 47	
C4229	ECEA1CKA100	ELECTROLYTIC 16V 10	
C4230	ECEA1CKA100	ELECTROLYTIC 16V 10	
C4271	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C4273	ECUV1E823KBN	C CHIP 25V 0.082	MKA
C4274	ECUV1E823KBN	C CHIP 25V 0.082	MKA
C4275	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C4277	ECUV1H333KBN	C CHIP 50V 0.033	
C4278	ECUV1H333KBN	C CHIP 50V 0.033	
C4284	ECUV1H103KBN	C CHIP 50V 0.01	
C4285	ECUV1H103KBN	C CHIP 50V 0.01	
C4286	ECUV1H152KBN	C CHIP 50V 1500P	
C4287	ECUV1H152KBN	C CHIP 50V 1500P	
C4301	ECEA0JKA101	ELECTROLYTIC 6.3V 100	
C4302	ECEA0JKA101	ELECTROLYTIC 6.3V 100	
C4303	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C4304	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C4305	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C4306	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C4307	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C4308	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C9001	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7	
C9002	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7	
C9003	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7	
C9004	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7	
C9005	ECEA1CKA100	ELECTROLYTIC 16V 10	
C9006	ECEA1HKA010	ELECTROLYTIC 50V 1	
C9007	ECUV1H562KBN	C CHIP 50V 5600P	
C9008	ECUV1E123KBN	C CHIP 25V 0.012	
C9009	ECEA1EKN4R7	ELECTROLYTIC 25V 4.7	

Ref. No.	Part No.	Part Name& Description	Remarks
C9010	ECEA1HKA010	ELECTROLYTIC 50V 1	
C9011	ECEA1CKA100	ELECTROLYTIC 16V 10	
C9012	ECEA1CKA100	ELECTROLYTIC 16V 10	
C9013	ECEA1CKA100	ELECTROLYTIC 16V 10	
C9014	ECEA1EKN4R7	ELECTROLYTIC 25V 4.7	
C9015	ECEA1HKA3R3	ELECTROLYTIC 50V 3.3	
C9016	ECEA1EKN4R7	ELECTROLYTIC 25V 4.7	
C9017	ECUV1E473KBN	C CHIP 25V 0.047	
C9018	ECUV1H272KBN	C CHIP 50V 2700P	
C9019	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C9020	ECEA1CKA220	ELECTROLYTIC 16V 22	
C9021	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C9022	ECEA0JKA470	ELECTROLYTIC 6.3V 47	
C9023	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C9024	ECEA0JKA470	ELECTROLYTIC 6.3V 47	
C9101	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7	
C9102	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7	
C9103	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7	
C9104	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7	
C9105	ECEA1CKA100	ELECTROLYTIC 16V 10	
C9106	ECEA1HKA010	ELECTROLYTIC 50V 1	
C9107	ECUV1H562KBN	C CHIP 50V 5600P	
C9108	ECUV1H123KBN	C CHIP 50V 0.012	
C9109	ECEA1EKN4R7	ELECTROLYTIC 25V 4.7	
C9110	ECEA1HKA010	ELECTROLYTIC 50V 1	
C9111	ECEA1CKA100	ELECTROLYTIC 16V 10	
C9112	ECEA1CKA100	ELECTROLYTIC 16V 10	
C9113	ECEA1CKA100	ELECTROLYTIC 16V 10	
C9114	ECEA1EKN4R7	ELECTROLYTIC 25V 4.7	
C9115	ECEA1HKA3R3	ELECTROLYTIC 50V 3.3	
C9116	ECEA1EKN4R7	ELECTROLYTIC 25V 4.7	
C9117	ECUV1H473KBN	C CHIP 50V 0.047	
C9118	ECUV1H272KBN	C CHIP 50V 2700P	
C9119	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C9120	ECEA1CKA220	ELECTROLYTIC 16V 22	
C9201	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C9202	ECEA0JKA470	ELECTROLYTIC 6.3V 47	
C9203	ECEA1CKA100	ELECTROLYTIC 16V 10	
C9204	ECQP1H102J	POLYESTER+-5% 50V 1000P	
C9205	ECEA1HKA010	ELECTROLYTIC 50V 1	
C9206	ECEA1HKA3R3	ELECTROLYTIC 50V 3.3	
C9207	ECEA1HKA010	ELECTROLYTIC 50V 1	
C9208	ECUV1H223KBN	C CHIP 50V 0.022	
C9209	ECUV1H223KBN	C CHIP 50V 0.022	
C9210	ECEA1HKA010	ELECTROLYTIC 50V 1	
C9211	ECEA1HKA010	ELECTROLYTIC 50V 1	

FILTERS

Ref. No.	Part No.	Part Name& Description	Remarks
FL4271	VLFS0014		
FL4272	VLFS0014		

COILS

Ref. No.	Part No.	Part Name& Description	Remarks
L9001	ELESN101KA	100	
L9101	ELESN101KA	100	
L9201	ELESN101KA	100	

PIN HEADERS

Ref. No.	Part No.	Part Name& Description	Remarks
P4201	VJHS0299	9P	
P4202	VJHS0298	PACK PIN 8P	
P4203	VJHS0298	PACK PIN 8P	
P4204	VJHS0298	PACK PIN 8P	
P4205	VJHS0298	PACK PIN 8P	
P4206	VJHS0298	PACK PIN 8P	
P4207	VJHS0295	PACK PIN 5P	

MISCELLANEOUS

Ref. No.	Part No.	Part Name& Description	Remarks
E39	VMAS1912	P.C.B. SUPPORT ANGLE	
E139	VEPS4033A	FM TRANSMITTER C.B.A. NR	MKA

12.3.3. TV PROCESS C.B.A. ▲

INTEGRATED CIRCUITS

Ref. No.	Part No.	Part Name& Description	Remarks
IC5201	M65667FP	IC, LINEAR P IN P SIGNAL PROCESS	
IC5202	BA033FP-E2	IC, LINEAR 3.3V REGULATOR	
IC5301	AN5367FB	IC,LINEAR Y/C SIGNAL PROCESS	MKA
IC5351	NJM2235M	IC, BIPOLAR LINEAR INPUT SELECT	
IC5352	NJM2235M	IC, BIPOLAR LINEAR INPUT SELECT	
IC5353	NJM2235M	IC, BIPOLAR LINEAR INPUT SELECT	
IC5651	TC90A45F-ELP	IC, LOGIC Y/C SEPARATION	E.S.D.

TRANSISTORS

Ref. No.	Part No.	Part Name& Description	Remarks
Q5201	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q5202	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q5203	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q5204	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q5205	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q5206	2SA1037K146R	CHIP	
	OR 2SB709A	CHIP	
Q5207	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q5208	2SA1037K146R	CHIP	
	OR 2SB709A	CHIP	
Q5209	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q5210	2SA1037K146R	CHIP	
	OR 2SB709A	CHIP	
Q5211	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q5212	2SA1037K146R	CHIP	
	OR 2SB709A	CHIP	
Q5213	2SA1037K146R	CHIP	
	OR 2SB709A	CHIP	
Q5214	2SA1037K146R	CHIP	
	OR 2SB709A	CHIP	
Q5215	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q5216	2SA1037K146R	CHIP	
	OR 2SB709A	CHIP	
Q5217	2SA1037K146R	CHIP	
	OR 2SB709A	CHIP	
Q5218	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q5301	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q5302	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q5651	2SA1037K146R	CHIP	
	OR 2SB709A	CHIP	
Q5652	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q5653	2SA1037K146R	CHIP	
	OR 2SB709A	CHIP	
Q5654	2SA1037K146R	CHIP	
	OR 2SB709A	CHIP	
Q5655	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q5656	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q5901	2SD1858(R)		MKA
	OR 2SD2259		

DIODES

Ref. No.	Part No.	Part Name& Description	Remarks
D5201	MA165		
	OR 1SS119		
	OR 1SS133T		
D5304	MA165		
	OR 1SS119		
	OR 1SS133T		
D5501	MA4062-L	ZENER 6.2V	⚠

RESISTORS

Ref. No.	Part No.	Part Name& Description	Remarks
R5201	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R5202	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R5203	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R5204	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R5205	ERJ6GEYJ682V	MGF CHIP 1/10W 6.8K	
R5206	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R5207	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R5208	ERJ6GEYJ682V	MGF CHIP 1/10W 6.8K	
R5210	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R5211	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R5212	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R5213	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R5214	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R5215	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R5216	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R5217	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R5218	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R5219	ERJ6GEYJ471V	MGF CHIP 1/10W 470	
R5220	ERJ6GEYJ331V	MGF CHIP 1/10W 330	
R5221	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R5222	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R5223	ERJ6GEYJ474V	MGF CHIP 1/10W 470K	
R5224	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R5225	ERJ6GEYJ331V	MGF CHIP 1/10W 330	
R5226	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R5227	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R5228	ERJ6GEYJ471V	MGF CHIP 1/10W 470	
R5229	ERJ6GEYJ331V	MGF CHIP 1/10W 330	
R5230	ERJ6GEYJ471V	MGF CHIP 1/10W 470	
R5231	ERJ6GEYJ182V	MGF CHIP 1/10W 1.8K	
R5232	ERJ6GEYJ682V	MGF CHIP 1/10W 6.8K	
R5233	ERJ6GEYJ682V	MGF CHIP 1/10W 6.8K	
R5234	ERJ6GEYJ471V	MGF CHIP 1/10W 470	
R5235	ERJ6GEYJ393V	MGF CHIP 1/10W 39K	
R5236	ERJ6GEYJ304V	MGF CHIP 1/10W 300K	
R5237	ERJ6GEYJ471V	MGF CHIP 1/10W 470	
R5238	ERJ6GEYJ152V	MGF CHIP 1/10W 1.5K	
R5239	ERJ6GEYJ471V	MGF CHIP 1/10W 470	
R5240	ERJ6GEYJ563V	MGF CHIP 1/10W 56K	
R5241	ERJ6GEY0R00V	MGF CHIP 1/10W 0	●

Ref. No.	Part No.	Part Name& Description	Remarks
R5242	ERJ6GEYJ122V	MGF CHIP 1/10W 1.2K	
R5243	ERJ6GEYJ332V	MGF CHIP 1/10W 3.3K	
R5244	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R5245	ERJ6GEYJ561V	MGF CHIP 1/10W 560	
R5246	ERJ6GEYJ391V	MGF CHIP 1/10W 390	
R5248	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R5249	ERJ6GEYJ821V	MGF CHIP 1/10W 820	
R5250	ERJ6GEY0R00V	MGF CHIP 1/10W 0	●
R5251	ERJ6GEYJ122V	MGF CHIP 1/10W 1.2K	
R5252	ERJ6GEYJ332V	MGF CHIP 1/10W 3.3K	
R5253	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R5254	ERJ6GEYJ561V	MGF CHIP 1/10W 560	
R5255	ERJ6GEYJ391V	MGF CHIP 1/10W 390	
R5256	ERJ6GEYJ561V	MGF CHIP 1/10W 560	
R5257	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R5258	ERJ6GEYJ821V	MGF CHIP 1/10W 820	
R5266	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R5267	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R5270	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R5271	ERJ6GEY0R00V	MGF CHIP 1/10W 0	●
R5272	ERJ6GEYJ561V	MGF CHIP 1/10W 560	
R5273	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R5274	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R5275	ERJ6GEYJ683V	MGF CHIP 1/10W 68K	
R5276	ERJ6GEYJ683V	MGF CHIP 1/10W 68K	
R5301	ERJ6GEYJ182V	MGF CHIP 1/10W 1.8K	
R5302	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R5303	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R5304	ERJ6GEYJ393V	MGF CHIP 1/10W 39K	
R5305	ERJ6GEYJ224V	MGF CHIP 1/10W 220K	
R5306	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R5307	ERJ6GEY0R00V	MGF CHIP 1/10W 0	●
R5308	ERJ6GEYJ393V	MGF CHIP 1/10W 39K	
R5309	ERJ6GEYJ184V	MGF CHIP 1/10W 180K	
R5311	ERJ6GEYJ331V	MGF CHIP 1/10W 330	
R5312	ERJ6GEYJ331V	MGF CHIP 1/10W 330	
R5313	ERJ6GEYJ331V	MGF CHIP 1/10W 330	
R5314	ERJ6GEYJ272V	MGF CHIP 1/10W 2.7K	
R5315	ERJ6GEYJ272V	MGF CHIP 1/10W 2.7K	
R5316	ERJ6GEYJ272V	MGF CHIP 1/10W 2.7K	
R5317	ERJ6GEY0R00V	MGF CHIP 1/10W 0	●
R5318	ERJ6GEYJ272V	MGF CHIP 1/10W 2.7K	
R5322	ERJ6GEY0R00V	MGF CHIP 1/10W 0	●
R5324	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R5325	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R5326	ERJ6GEYJ331V	MGF CHIP 1/10W 330	
R5327	ERJ6GEY0R00V	MGF CHIP 1/10W 0	●
R5328	ERJ6GEY0R00V	MGF CHIP 1/10W 0	●
R5351	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R5352	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R5353	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R5401	ERJ6GEYJ561V	MGF CHIP 1/10W 560	

Ref. No.	Part No.	Part Name& Description	Remarks
R5402	ERJ6GEYJ394V	MGF CHIP 1/10W 390K	
R5403	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R5405	ERJ6GEYJ822V	MGF CHIP 1/10W 8.2K	
R5406	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R5407	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R5501	ERJ6GEYJ471V	MGF CHIP 1/10W 470	
R5502	ERJ6GEYJ394V	MGF CHIP 1/10W 390K	
R5503	ERDS2TJ471	470	
R5504	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R5505	ERJ6ENF3241V	MGF CHIP+-1% 1/10W 3.24K	⚠
R5506	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R5508	ERJ6GEYJ561V	MGF CHIP 1/10W 560	
R5510	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R5511	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R5512	ERJ6GEYJ151V	MGF CHIP 1/10W 150	
R5513	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R5515	ERJ6GEYJ272V	MGF CHIP 1/10W 2.7K	
R5604	ERJ6GEYJ332V	MGF CHIP 1/10W 3.3K	
R5651	ERJ6GEYJ821V	MGF CHIP 1/10W 820	
R5652	ERJ6GEYJ561V	MGF CHIP 1/10W 560	
R5653	ERJ6GEYJ682V	MGFCHIP 1/10W 6.8K	
R5654	ERJ6GEYJ152V	MGF CHIP 1/10W 1.5K	
R5655	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R5656	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R5657	ERJ6GEYJ333V	MGF CHIP 1/10W 33K	
R5659	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R5660	ERJ6GEYJ821V	MGF CHIP 1/10W 820	
R5661	ERJ6GEYJ391V	MGF CHIP 1/10W 390	
R5662	ERJ6GEYJ391V	MGF CHIP 1/10W 390	
R5663	ERJ6GEYJ471V	MGF CHIP 1/10W 470	
R5664	ERJ6GEYJ561V	MGF CHIP 1/10W 560	
R5665	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R5666	ERJ6GEYJ561V	MGF CHIP 1/10W 560	
R5668	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R5670	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R5902	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R5903	ERDS1FJ3R3P	1/2W 3.3	
R5932	ERDS2TJ101	100	
R5933	ERDS2TJ101	100	

CAPACITORS

Ref. No.	Part No.	Part Name& Description	Remarks
C5201	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C5202	ECEA0JKA470	ELECTROLYTIC 6.3V 47	
C5203	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C5204	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C5205	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C5206	ECEA1HKA010	ELECTROLYTIC 50V 1	
C5207	ECEA0JKA470	ELECTROLYTIC 6.3V 47	
C5208	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C5209	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C5210	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C5211	ECEA0JKA470	ELECTROLYTIC 6.3V 47	
C5212	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C5213	ECEA1CKA100	ELECTROLYTIC 16V 10	
C5214	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C5215	ECEA0JKA470	ELECTROLYTIC 6.3V 47	
C5217	ECUV1H151JCN	C CHIP+-5% 50V 150P	
C5218	ECUV1H681KBN	C CHIP 50V 680P	
C5219	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C5220	ECEA0JKA470	ELECTROLYTIC 6.3V 47	
C5221	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C5222	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C5223	ECUV1H151JCN	C CHIP+-5% 50V 150P	
C5224	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C5225	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C5226	ECUV1H680JCN	C CHIP+-5% 50V 68P	
C5227	ECEA0JKA470	ELECTROLYTIC 6.3V 47	
C5228	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C5230	ECEA1HKN010	ELECTROLYTIC 50V 1	
C5231	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C5232	ECUV1E393KBN	C CHIP 25V 0.039	
C5233	ECUV1H103KBN	C CHIP 50V 0.01	
C5234	ECUV1H103KBN	C CHIP 50V 0.01	
C5235	VCUSTBC224KB	C CHIP 16V 0.22	
C5236	ECUV1H680JCN	C CHIP+-5% 50V 68P	
C5237	ECEA0JKA470	ELECTROLYTIC 6.3V 47	
C5238	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C5241	ECUV1H152KBN	C CHIP 50V 1500P	
C5242	ECEA1HKSR47	ELECTROLYTIC 50V 0.47	
C5243	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C5244	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C5245	ECEA0JKA101	ELECTROLYTIC 6.3V 100	
C5246	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C5249	ECEA0JKA220	ELECTROLYTIC 6.3V 22	
C5250	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C5252	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C5253	ECEA1CKA220	ELECTROLYTIC 16V 22	
C5254	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C5255	ECEA1CKA220	ELECTROLYTIC 16V 22	
C5256	ECUV1H391JCN	C CHIP+-5% 50V 390P	
C5257	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
C5258	ECEA1CKN100	ELECTROLYTIC 16V 10	
C5259	ECUV1H680JCN	C CHIP+-5% 50V 68P	
C5260	ECEA0JKA101	ELECTROLYTIC 6.3V 100	
C5261	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	

Ref. No.	Part No.	Part Name& Description	Remarks
C5262	ECEA0JKA470	ELECTROLYTIC 6.3V 47	
C5263	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C5264	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C5265	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C5266	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C5267	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C5301	ECEA1CKN100	ELECTROLYTIC 16V 10	
C5302	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7	
C5303	ECEA1HKAR47	ELECTROLYTIC 50V 0.47	
C5305	ECEA1HKAR47	ELECTROLYTIC 50V 0.47	
C5306	ECEA1CKN100	ELECTROLYTIC 16V 10	
C5307	ECEA1CKN100	ELECTROLYTIC 16V 10	
C5308	ECEA1CKN100	ELECTROLYTIC 16V 10	
C5352	ECEA1CKA100	ELECTROLYTIC 16V 10	
C5353	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C5354	ECEA0JKA220	ELECTROLYTIC 6.3V 22	
C5355	ECEA1CKA100	ELECTROLYTIC 16V 10	
C5356	ECEA1CKA100	ELECTROLYTIC 16V 10	
C5357	ECEA1CKA100	ELECTROLYTIC 16V 10	
C5358	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C5359	ECEA0JKA220	ELECTROLYTIC 6.3V 22	
C5360	ECEA1CKA100	ELECTROLYTIC 16V 10	
C5361	ECEA1CKA100	ELECTROLYTIC 16V 10	
C5362	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C5363	ECEA0JKA220	ELECTROLYTIC 6.3V 22	
C5364	ECUV1H220JCN	C CHIP+-5% 50V 22P	
C5365	ECUV1H220JCN	C CHIP+-5% 50V 22P	
C5366	ECUV1H220JCN	C CHIP+-5% 50V 22P	
C5367	ECEA1CKA100	ELECTROLYTIC 16V 10	
C5368	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C5369	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C5401	VCUSTBC224KB	C CHIP 16V 0.22	
C5402	ECUV1H222KBN	C CHIP 50V 2200P	
C5403	ECEA1HKA2R2	ELECTROLYTIC 50V 2.2	
C5501	ECUV1E183KBN	C CHIP 25V 0.018	
C5502	ECUV1H681KBN	C CHIP 50V 680P	
C5505	ECEA1CKA470	ELECTROLYTIC 16V 47	
C5506	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C5507	ECEA1CKA100	ELECTROLYTIC 16V 10	
C5508	ECUV1H221JSN	C CHIP+-5% 50V 220P	MKA
C5510	ECEA1HKA010	ELECTROLYTIC 50V 1	
C5511	ECUV1E333KBN	C CHIP 25V 0.033	
C5516	ECUV1E333KBN	C CHIP 25V 0.033	
C5601	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C5602	ECUV1E104KBN	C CHIP 25V 0.1	
C5603	ECUV1H150JCN	C CHIP+-5% 50V 15P	
C5604	ECEA1HKA010	ELECTROLYTIC 50V 1	
C5605	ECUV1E153KBN	C CHIP 25V 0.015	
C5652	ECUV1H100CCN	C CHIP+-0.25P 50V 10P	
C5653	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C5654	ECEA1HKA010	ELECTROLYTIC 50V 1	
C5655	ECUV1H270JCN	C CHIP+-5% 50V 27P	
C5656	ECEA0JKA470	ELECTROLYTIC 6.3V 47	
C5657	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	

Ref. No.	Part No.	Part Name& Description	Remarks
C5658	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C5659	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C5660	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C5661	ECUV1H104ZFN	C CHIP+80%-20% 50V 0.1	
C5662	ECEA0JKA470	ELECTROLYTIC 6.3V 47	
C5663	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C5664	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C5665	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C5666	ECEA0JKA220	ELECTROLYTIC 6.3V 22	
C5668	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C5669	ECUV1H181JCN	C CHIP+-5% 50V 180P	
C5670	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C5671	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C5672	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C5673	ECUV1H560JCN	C CHIP+-5% 50V 56P	
C5674	ECUV1H390JCN	C CHIP+-5% 50V 39P	
C5675	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C5676	ECEA1CKA220	ELECTROLYTIC 16V 22	
C5677	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C5678	ECEA1CKA220	ELECTROLYTIC 16V 22	
C5680	ECUV1H270JCN	C CHIP+-5% 50V 27P	
C5902	ECEA1CKA470	ELECTROLYTIC 16V 47	
C5903	ECEA1CKA470	ELECTROLYTIC 16V 47	
C5904	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C5905	ECEA0JKA101	ELECTROLYTIC 6.3V 100	
C5906	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C5932	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	

FILTERS

Ref. No.	Part No.	Part Name& Description	Remarks
FL5651	LSLF0053	EMI FILTER(STY103NB)	

COILS

Ref. No.	Part No.	Part Name& Description	Remarks
L5201	ELESN330KA	33	
L5202	ELESN330KA	33	
L5203	ELESN330KA	33	
L5204	ELESN330KA	33	
L5205	ELESN330KA	33	
L5206	ELESN330KA	33	
L5207	ELESN330KA	33	
L5208	ELESN330KA	33	
L5210	ELESN101KA	100	
L5212	ELESN101KA	100	
L5213	ELESN101KA	100	
L5218	EXCELDR25V	BEAD INDUCTOR	
L5219	EXCELDR25V	BEAD INDUCTOR	
L5220	EXCELDR25V	BEAD INDUCTOR	
L5221	ELESN101KA	100	
L5301	VLPS0111	CHIP BEAD INDUCTOR	MKA
L5302	VLPS0111	CHIP BEAD INDUCTOR	MKA
L5303	VLPS0111	CHIP BEAD INDUCTOR	MKA
L5351	ELESN101KA	100	
L5352	ELESN101KA	100	
L5353	ELESN101KA	100	
L5652	ELESN150KA	15	
L5653	LSLQF06R101K	+-10% 100	
L5654	ELESN4R7KA	4.7	
L5656	ELESN101KA	100	
L5657	ELESN101KA	100	
L5658	ELESN101KA	100	
L5901	ELESN101KA	100	

CRYSTAL OSCILLATOR

Ref. No.	Part No.	Part Name& Description	Remarks
X5201	LSSX0043		
X5501	CSB503F38		
X5601	VSXS0208-A		MKA

PIN HEADERS

Ref. No.	Part No.	Part Name& Description	Remarks
P5301	VJSS0899	CONNECTOR 4P	
P5302	VJHS0296	6P	
P5303	VJHS0292	12P	
P5304	VJHS0297	PACK PIN 7P	
P5305	VJHS0292	12P	
P5306	VJHS0296	6P	
P8001	VJPS0255	CONNECTOR 5P	

MISCELLANEOUS

Ref. No.	Part No.	Part Name& Description	Remarks
E30	VMTS0035	CUSHION,RUBBER	
E39	VMAS1912	P.C.B. SUPPORT ANGLE	
E108	VMFS0136	SHEET,NYLON+RAYON	
E154	LSGQ0027	CUSHION,PLASTIC	MKA

12.3.4. VERTICAL C.B.A. ▲

INTEGRATED CIRCUITS

Ref. No.	Part No.	Part Name& Description	Remarks
IC451	LA7837	IC, LINEAR VERTICAL OUT	

TRANSISTORS

Ref. No.	Part No.	Part Name& Description	Remarks
Q431	2SA1175		
	OR 2SA1175(TH)		MKA
	OR 2SA733(TQ)		MKA
Q432	2SC3311A(R)		MKA
Q433	2SB1322A(R)		MKA
	OR 2SB1322A(S)		MKA
Q434	2SC3311A(R)		MKA
Q502	2SC2785(TH)		MKA
	OR 2SC2785(TJ)		MKA
	OR 2SC945A(TQ)		
Q541	2SA1175		
	OR 2SA1175(TH)		MKA
	OR 2SA733(TQ)		MKA
Q542	2SC2785(TH)		MKA
	OR 2SC2785(TJ)		MKA
	OR 2SC945A(TQ)		

DIODES

Ref. No.	Part No.	Part Name& Description	Remarks
D401	ERB12-01		
	OR ERB12-01RKV1		
	OR ERB12-01V		
D502	MA165		
	OR 1SS119		
	OR 1SS133T		
D504	MA4047-H	ZENER 4.7V	
	OR MA4047-M	ZENER 4.7V	
	OR RD4.7ESAB	ZENER 4.7V	
	OR RD4.7ESAB2	ZENER 4.7V	
	OR 04AZ4.7ZTPA7	ZENER 4.7V	
D506	MA165		
	OR 1SS119		
	OR 1SS133T		
D541	MA165		
	OR 1SS119		
	OR 1SS133T		
D542	MA4180-M	ZENER 18V	
D543	MA165		
	OR 1SS119		
	OR 1SS133T		
D544	ERB43-04V		
	OR ES1V		

RESISTORS

Ref. No.	Part No.	Part Name& Description	Remarks
R401	ERDS2TJ561	560	
R402	ERDS2TJ103	10K	
R405	ERG2SJ561H	METAL OXIDE 2W 560	
R406	ERDS2TJ334	330K	
R409	ERJ6GEYJ273V	MGF CHIP 1/10W 27K	
R410	ERDS2TJ272	2.7K	
R411	ERDS2TJ104	100K	
R413	ERJ6GEYJ333V	MGF CHIP 1/10W 33K	
R414	ERX1SJ1R2P	METAL OXIDE 1W 1.2	⚠ MKA
R422	ERD25FJ101P	100	⚠
R427	ERQ14AJ5R6P	FUSE 5.6	⚠ MKA
R431	ERDS2TJ103	10K	
R432	ERJ6GEYJ563V	MGF CHIP 1/10W 56K	
R433	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R434	ERDS2TJ103	10K	
R435	ERDS2TJ102	1K	
R436	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R466	ERJ6GEYJ683V	MGF CHIP 1/10W 68K	
R468	ERDS2TJ102	1K	
R469	ERDS2TJ222	2.2K	
R470	ERDS2TJ222	2.2K	
R471	ERDS2TJ561	560	
R472	ERDS2TJ561	560	
R473	ERDS2TJ101	100	
R474	ERDS1TJ102	1/2W 1K	
R475	ERDS1TJ102	1/2W 1K	

Ref. No.	Part No.	Part Name& Description	Remarks
R476	ERDS2TJ561	560	
R477	ERDS2TJ102	1K	
R478	ERDS2TJ332	3.3K	
R480	ERDS1TJ391	1/2W 390	
R481	ERDS1TJ122	1/2W 1.2K	
R482	ERDS2TJ150	15	
R486	ERDS2TJ561	560	
R487	ERDS1TJ122	1/2W 1.2K	
R503	ER0S2THF1072	+-1% 1/4W 10.7K	⚠
	OR ER0S2TKF1072	+-1% 1/4W 10.7K	⚠
	OR VRESR4TF1072	+-1% 1/4W 10.7K	⚠
R509	ERDS2TJ101	100	
R510	ERDS2TJ472	4.7K	
R515	ERJ6GEYJ563V	MGF CHIP 1/10W 56K	
R519	ERDS2TJ123	12K	
R520	ERDS2TJ562	5.6K	
R523	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R524	ERDS2TJ223	22K	
R525	ERDS2TJ222	2.2K	
R541	ERDS2TJ473	47K	
R542	ERDS2TJ103	10K	
R543	ERDS2TJ472	4.7K	
R545	ERDS2TJ331	330	
R546	ERDS2TJ103	10K	
R547	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R548	ERDS2TJ104	100K	

CAPACITORS

Ref. No.	Part No.	Part Name& Description	Remarks
C401	ECEA1HGE2R2	ELECTROLYTIC 50V 2.2	
C402	ECA1CM471B	ELECTROLITIC 16V 470	
C408	ECA1HGE010KB	ELECTROLYTIC 50V 1	MKA
C409	ECA1VM101B	ELECTROLYTIC 35V 100	
C413	ECQB1H104KF	POLYESTER 50V 0.1	
C414	ECA1CM222E	ELECTROLYTIC 16V 2200	MKA
C418	ECA1VM221B	ELECTROLYTIC 35V 220	
C458	ECQB1H103KM	POLYESTER 50V 0.01	MKA
C541	ECA1HM100B	ELECTROLYTIC 50V 10	
C543	ECA1HM100B	ELECTROLYTIC 50V 10	

PIN HEADERS

Ref. No.	Part No.	Part Name& Description	Remarks
P451	VJHS0291	11P	
P452	VJHS0299	9P	

MISCELLANEOUS

Ref. No.	Part No.	Part Name& Description	Remarks
E39	VMAS1912	P.C.B. SUPPORT ANGLE	
E48	XYN3+F10S	SCREW W/WASHER,STEEL	
E50	TMM7443-1	CLAMPER	MKA
E142	LML69002A	CLAMPER	MKA
E143	LSSC0254	HEAT SINK	MKA

12.3.5. TV POWER C.B.A. ■

INTEGRATED CIRCUITS

Ref. No.	Part No.	Part Name& Description	Remarks
IC801	STR30130	IC, LINEAR+130V REGULATOR	⚠

RESISTORS

Ref. No.	Part No.	Part Name& Description	Remarks
R801	ERF5ZKR82	W FLMPRF+-10% 5W 0.82	⚠
R802	ERDS1FPJ103V	1/2W 10K	⚠
R803	ERF10ZK8R2S	W FIMPRF+-10% 10W 8.2	MKA
R804	ERF20ZJ131	W FLMPRF 20W 130	
R805	ERDS2TJ104	100K	
R806	ERQ14AJ470P	FUSE 47	⚠
R813	ERDS2TJ124	120K	

CAPACITORS

Ref. No.	Part No.	Part Name& Description	Remarks
C805	ECOS2DP681BB	ELECTROLYTIC 200V 680	⚠ MKA
C806	ECA2EM330E	ELECTROLYTIC 250V 33	MKA

COILS

Ref. No.	Part No.	Part Name& Description	Remarks
L802	VLQSAE8D220K	22	MKA

MISCELLANEOUS

Ref. No.	Part No.	Part Name& Description	Remarks
E47	XTW3+10J	TAPPING SCREW,STEEL	
E48	XYN3+F10S	SCREW W/WASHER,STEEL	
E73	TUX77809	CLAMPER	MKA
E144	LSSC0346	HEAT SINK SUPPORT ANGLE	MKA
E145	TUC77627	HEAT SINK	MKA
E146	XTW3+8J	TAPPING SCREW,STEEL	

12.3.6. CAPSTAN STATOR C.B.A. NR ■

INTEGRATED CIRCUITS

Ref. No.	Part No.	Part Name& Description	Remarks
IC2501	AN3846SC	IC, LINEAR CAP./LOADING DRIVE	
	OR AN3845SC	IC, LINEAR CAP./LOADING DRIVE	

RESISTORS

Ref. No.	Part No.	Part Name& Description	Remarks
R2501	ERJ8GEYJ1R0Z	MGF CHIP 1/8W 1	
R2502	ERJ8GEYJ1R0Z	MGF CHIP 1/8W 1	
R2505	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	

CAPACITORS

Ref. No.	Part No.	Part Name& Description	Remarks
C2504	ECUV1H103ZFN	C CHIP+80%-20%50V 0.01	
C2506	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C2507	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C2508	ECUV1E104KBN	C CHIP 25V 0.1	
C2509	ECUV1E104KBN	C CHIP 25V 0.1	
C2510	ECUV1E104KBN	C CHIP 25V 0.1	
C2511	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C2517	ECUV1E104KBN	C CHIP 25V 0.1	
C2519	ECUV1H102KBN	C CHIP 50V 1000P	
C2520	ECUV1C225ZFN	C CHIP+80%-20% 16V 2.2	
C2521	ECUV1C225ZFN	C CHIP+80%-20% 16V 2.2	
C2522	ECUV1C225ZFN	C CHIP+80%-20% 16V 2.2	

PIN HEADERS

Ref. No.	Part No.	Part Name& Description	Remarks
P2503	VJSS3337	CONNECTOR 2P	

MISCELLANEOUS

Ref. No.	Part No.	Part Name& Description	Remarks
E127	XQN2+B35	SCREW,STEEL	
E128	XYN2+J7	SCREW W/WASHER,STEEL	
E129	LSMA0384	BACK PLATE,STEEL	
E130(IC2505)	EZMPS300F12	MR HEAD	
E131(P2502)	LSJS0097	CONNECOR 12P	

12.3.7. Hi-Fi AUDIO/VIDEO HEAD AMP C.B.A. ■

INTEGRATED CIRCUITS

Ref. No.	Part No.	Part Name& Description	Remarks
IC3501	AN3361SB	IC, LINEAR HEAD AMP	
IC4401	AN3328S	IC, LINEAR Hi-Fi AUDIO HEAD AMP	

RESISTORS

Ref. No.	Part No.	Part Name& Description	Remarks
R3501	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R3502	ERJ6GEYJ560V	MGF CHIP 1/10W 56	
R3503	ERJ6GEYJ560V	MGF CHIP 1/10W 56	
R3504	ERJ6GEYJ560V	MGF CHIP 1/10W 56	
R3505	ERJ6GEYJ560V	MGF CHIP 1/10W 56	
R3506	ERJ6GEYJ561V	MGF CHIP 1/10W 560	
R3507	ERJ6GEYJ561V	MGF CHIP 1/10W 560	
R4405	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R4406	ERJ6GEYJ180V	MGF CHIP 1/10W 18	
R4407	ERJ6GEYJ561V	MGF CHIP 1/10W 560	
R4408	ERJ6GEY0R00V	MGF CHIP 1/10W 0	●
R4410	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R4411	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	

CAPACITORS

Ref. No.	Part No.	Part Name& Description	Remarks
C3504	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C3505	ECEA1CKA470	ELECTROLYTIC 16V 47	
C3506	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C3507	ECUV1H102KBN	C CHIP 50V 1000P	
C3508	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C3511	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C3512	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C3513	ECUV1H104ZFN	C CHIP+80%-20% 50V 0.1	
C3519	ECUV1H104ZFN	C CHIP+80%-20% 50V 0.1	
C3520	ECUV1H104ZFN	C CHIP+80%-20% 50V 0.1	
C3523	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C3524	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C3528	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C3529	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C3532	ECUV1E104ZFN	C CHIP+80%-20% 25V 0.1	
C3533	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C4401	ECUV1H102KBN	C CHIP 50V 1000P	
C4402	ECUV1H102KBN	C CHIP 50V 1000P	
C4405	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C4406	ECUV1H472KBN	C CHIP 50V 4700P	
C4408	ECEA1CKA100	ELECTROLYTIC 16V 10	
C4409	ECUV1H103ZFN	C CHIP+80%-20% 50V 0.01	
C4411	ERJ6GEY0R00V	MGF CHIP 1/10W 0	●
C4412	ECUV1H104ZFN	C CHIP+80%-20% 50V 0.1	
C4413	ECUV1H104ZFN	C CHIP+80%-20% 50V 0.1	
C4414	ECEA0JKA470	ELECTROLYTIC 6.3V 47	

COILS

Ref. No.	Part No.	Part Name& Description	Remarks
L3501	ELESN101KA	100	
L4401	VLQSH02R101K	100	

PIN HEADERS

Ref. No.	Part No.	Part Name& Description	Remarks
P2601	LSJS0096	CONNECTOR 12P	
P3501	VJSS0886	CONNECTOR 20P	
P4091	LSJWM6S085AC	CONNECTOR CABLE W/OUT PLUG,AC40VP-P	

12.3.8. CRT C.B.A. ■

TRANSISTORS

Ref. No.	Part No.	Part Name& Description	Remarks
Q351	2SC3063		MKA
	OR 2SC3271F(N)		MKA
	OR 2SC3619		MKA
Q352	2SC3063		MKA
	OR 2SC3271F(N)		MKA
	OR 2SC3619		MKA
Q353	2SC3063		MKA
	OR 2SC3271F(N)		MKA
	OR 2SC3619		MKA

RESISTORS

Ref. No.	Part No.	Part Name& Description	Remarks
R351	ERG2ANJ153H	METAL OXIDE 2W 15K	
R352	ERG2ANJ153H	METAL OXIDE 2W 15K	
R353	ERG2ANJ153H	METAL OXIDE 2W 15K	
R354	ERD25TJ272	2.7K	
R355	ERD25TJ272	2.7K	
R356	ERD25TJ272	2.7K	
R357	ERDS2TJ332	3.3K	
R358	ERDS2TJ332	3.3K	
R359	ERDS2TJ332	3.3K	
R360	ERDS2TJ331	330	
R361	ERDS2TJ331	330	
R362	ERDS2TJ331	330	
R363	ERDS2TJ101	100	
R364	ERDS2TJ101	100	
R365	ERDS2TJ101	100	

CAPACITORS

Ref. No.	Part No.	Part Name& Description	Remarks
C351	VCYSARH561KB	CERAMIC 50V 560P	
C352	VCYSARH561KB	CERAMIC 50V 560P	
C353	VCYSARH681KB	CERAMIC 50V 680P	
C354	VCKSKZM102KB	CERAMIC 2KV 1000P	MKA

PIN HEADERS

Ref. No.	Part No.	Part Name& Description	Remarks
P351	VJWS4MN460AC	PARALLEL CONNECTOR 4P	
P352	VJWS4NN430AC	PARALLEL CONNECTOR 4P	
P353	TJSC01200	CRT SOCKET	

MISCELLANEOUS

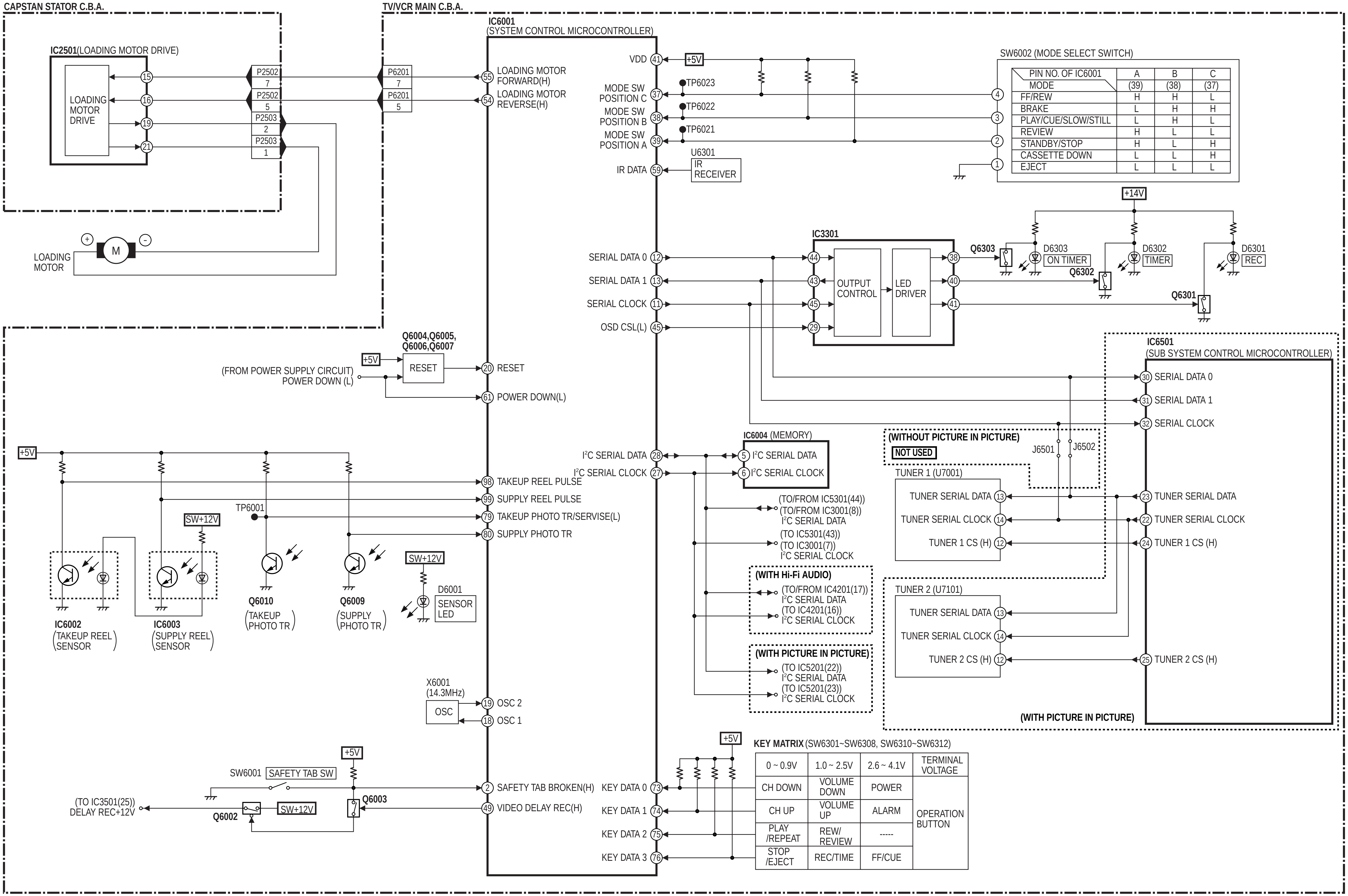
Ref. No.	Part No.	Part Name& Description	Remarks
E50	TMM7443-1	CLAMPER	

12.3.9. SUMMARY OF "E" ITEM NUMBERS

REFER TO ELECTRICAL PARTS LIST FOR MODEL INFORMATION

Ref. No.	Part No.	Part Name& Description	Remarks
E1	VEPS3083D	TV/VCR MAIN C.B.A.	RTL
E2	VEPS4034B	AUDIO C.B.A.	RTL
E6	VEPS5035Z	Hi-Fi AUDIO/VIDEO HEAD AMP C.B.A.	RTL
E12	LRP63017B	TV POWER C.B.A.	RTL
E17	LRP63005E	CRT C.B.A.	RTL
E21	ENG36703G	TUNER 1,UHF/VHF NR	
E22	LFX6106A	AC CORD W/PLUG,125V	⚠
E22	LSJA0256	AC CORD W/PLUG,125V	⚠
E23	EYF52BC	FUSE HOLDER	
E27	TSOP1837UH1	INFRARED RECEIVER UNIT	
E30	VMTS0035	CUSHION,RUBBER	
E39	VMAS1912	P.C.B. SUPPORT ANGLE	
E43	TUC77628	HEAT SINK	
E44	LML69001A	ANODE LEAD CLAMPER	
E46	XTV3+10G	TAPPING SCREW,STEEL	
E47	XTW3+10J	TAPPING SCREW,STEEL	
E48	XYN3+F10S	SCREW W/WASHER,STEEL	
E50	TMM7443-1	CLAMPER	
E51	TJC6319	FUSE HOLDER	
E55	XNG3	NUT,STEEL	
E73	TUX77809	CLAMPER	
E108	VMFS0136	SHEET,NYLON+RAYON	
E113	VEKS5712	FM RADIO ANTENNA CORD,0V	
E126	VEMS0331	CAPSTAN STATOR C.B.A. NR	
E127	XQN2+B35	SCREW,STEEL	
E128	XYN2+J7	SCREW W/WASHER,STEEL	
E129	LSMA0384	BACK PLATE,STEEL	
E130(IC2505)	EZMPS300F12	MR HEAD	
E131(P2502)	LSJS0097	CONNECOR 12P	
E134	VEPS3084C	TV PROCESS C.B.A.	RTL
E135	LRP63019B	VERTICAL C.B.A.	RTL
E136	LSSC0348	SHIELD PLATE,STEEL	
E137	VSCS1072	HEAT SINK	
E138	XYN3+F8S	SCREW W/WASHER,STEEL	
E139	VEPS4033A	FM TRANSMITTER C.B.A. NR	
E142	LML69002A	CLAMPER	
E143	LSSC0254	HEAT SINK	
E144	LSSC0346	HEAT SINK SUPPORT ANGLE	
E145	TUC77627	HEAT SINK	
E146	XTW3+8J	TAPPING SCREW,STEEL	
E147	LSMB0226	FM ANTENNA	
E148	LSGF0037	BARRIER	
E150	ENG36704G	TUNER 2,UHF/VHF NR	
E151	T3A1301	GROUNDING STRAP	

Ref. No.	Part No.	Part Name& Description	Remarks
E152	VEKS5755	GROUNDING WIRE	
E153	LSZC0001	SHEET,CU	
E154	LSGQ0027	CUSHION,PLASTIC	

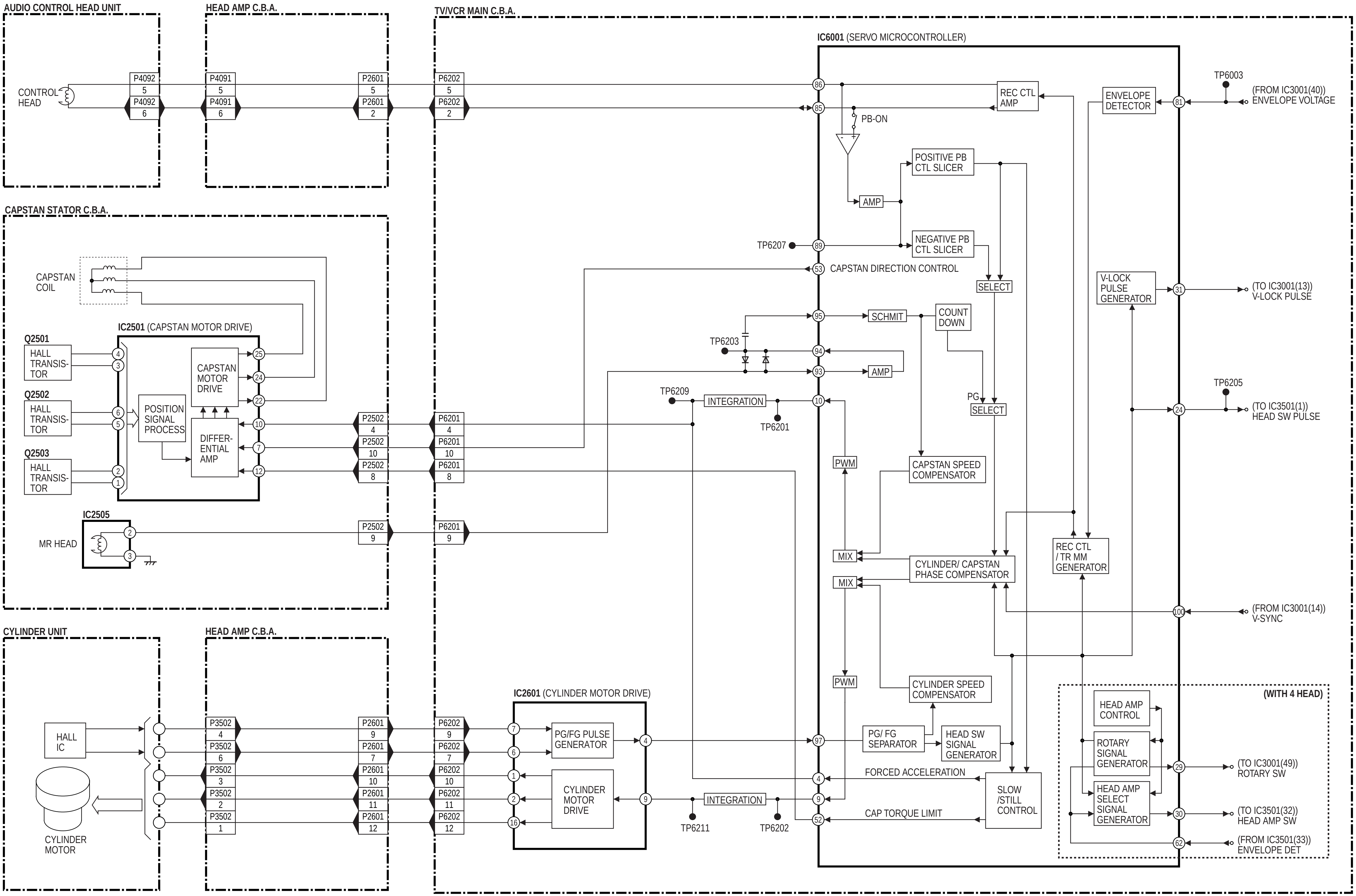

CAPSTAN STATOR C.B.A.
TV/VCR MAIN C.B.A.
IC2501(LOADING MOTOR DRIVE)
LOADING MOTOR DRIVE
15
16
19
21
P2502 7
P2502 5
P2503 2
P2503 1
P6201 7
P6201 5
LOADING MOTOR
M
+
-
IC6001 (SYSTEM CONTROL MICROCONTROLLER)
55 LOADING MOTOR FORWARD(H)
54 LOADING MOTOR REVERSE(H)
VDD 41
+5V
MODE SW POSITION C 37
TP6023
MODE SW POSITION B 38
TP6022
MODE SW POSITION A 39
TP6021
IR DATA 59
U6301 IR RECEIVER
SW6002 (MODE SELECT SWITCH)
4
3
2
1
+14V
SERIAL DATA 0 12
SERIAL DATA 1 13
SERIAL CLOCK 11
OSD CSL(L) 45
IC3301
44
43
45
29
OUTPUT CONTROL
LED DRIVER
38
40
41
Q6303
D6303 ON TIMER
Q6302
D6302 TIMER
D6301 REC
Q6301
Q6004,Q6005, Q6006,Q6007
+5V
RESET
(FROM POWER SUPPLY CIRCUIT) POWER DOWN (L)
20 RESET
61 POWER DOWN(L)
IC6501 (SUB SYSTEM CONTROL MICROCONTROLLER)
30 SERIAL DATA 0
31 SERIAL DATA 1
32 SERIAL CLOCK
(WITHOUT PICTURE IN PICTURE)
NOT USED
J6501
J6502
TUNER 1 (U7001)
TUNER SERIAL DATA 13
TUNER SERIAL CLOCK 14
TUNER 1 CS (H) 12
23 TUNER SERIAL DATA
22 TUNER SERIAL CLOCK
24 TUNER 1 CS (H)
TUNER 2 (U7101)
TUNER SERIAL DATA 13
TUNER SERIAL CLOCK 14
TUNER 2 CS (H) 12
25 TUNER 2 CS (H)
(WITH PICTURE IN PICTURE)
I²C SERIAL DATA 28
I²C SERIAL CLOCK 27
IC6004 (MEMORY)
5 I²C SERIAL DATA
6 I²C SERIAL CLOCK
(TO/FROM IC5301(44)) (TO/FROM IC3001(8)) I²C SERIAL DATA
(TO IC5301(43)) (TO IC3001(7)) I²C SERIAL CLOCK
(WITH Hi-Fi AUDIO)
(TO/FROM IC4201(17)) I²C SERIAL DATA
(TO IC4201(16)) I²C SERIAL CLOCK
(WITH PICTURE IN PICTURE)
(TO IC5201(22)) I²C SERIAL DATA
(TO IC5201(23)) I²C SERIAL CLOCK
+5V
98 TAKEUP REEL PULSE
99 SUPPLY REEL PULSE
79 TAKEUP PHOTO TR/SERVISE(L)
80 SUPPLY PHOTO TR
TP6001
SW+12V
IC6002 (TAKEUP REEL SENSOR)
IC6003 (SUPPLY REEL SENSOR)
Q6010 (TAKEUP PHOTO TR)
Q6009 (SUPPLY PHOTO TR)
SW+12V
D6001 SENSOR LED
X6001 (14.3MHz)
OSC
19 OSC 2
18 OSC 1
+5V
SW6001 SAFETY TAB SW
2 SAFETY TAB BROKEN(H)
49 VIDEO DELAY REC(H)
Q6003
Q6002
SW+12V
(TO IC3501(25)) DELAY REC+12V
+5V
KEY DATA 0 73
KEY DATA 1 74
KEY DATA 2 75
KEY DATA 3 76
KEY MATRIX (SW6301~SW6308, SW6310~SW6312)

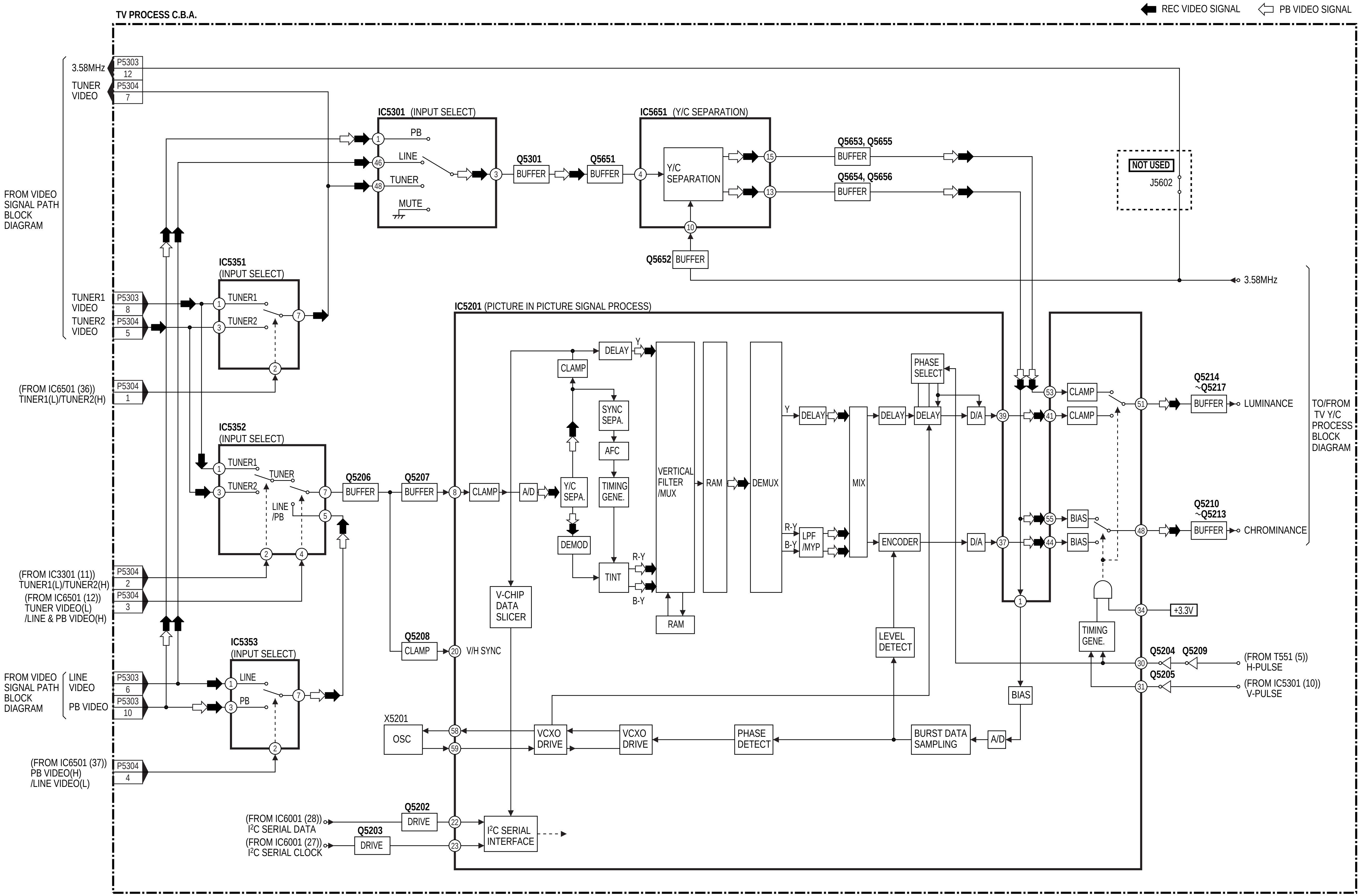
SW6002 (MODE SELECT SWITCH)

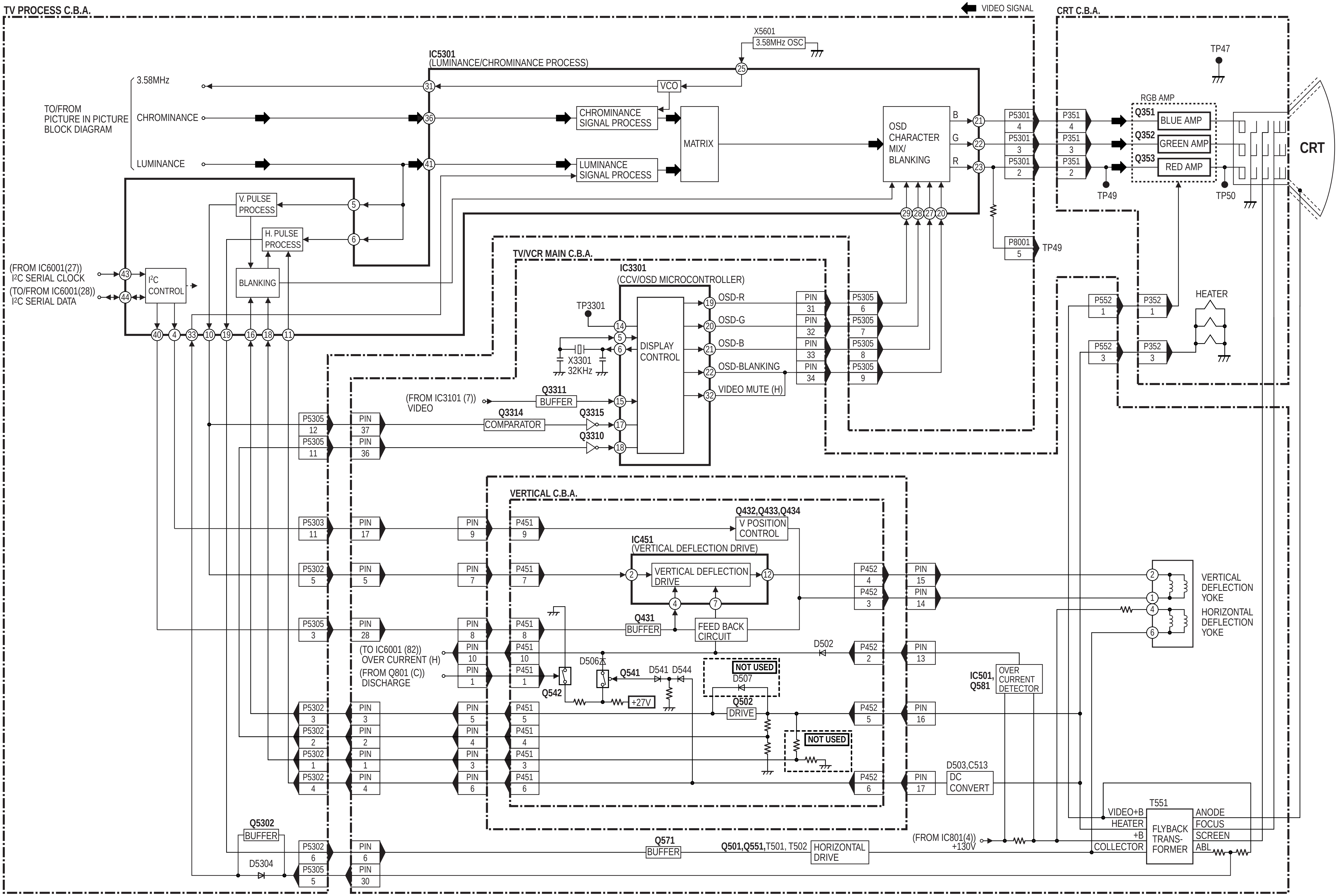
PIN NO. OF IC6001	A	B	C
MODE	(39)	(38)	(37)
FF/REW	H	H	L
BRAKE	L	H	H
PLAY/CUE/SLOW/STILL	L	H	L
REVIEW	H	L	L
STANDBY/STOP	H	L	H
CASSETTE DOWN	L	L	H
EJECT	L	L	L

KEY MATRIX (SW6301~SW6308, SW6310~SW6312)

0 ~ 0.9V	1.0 ~ 2.5V	2.6 ~ 4.1V	TERMINAL VOLTAGE
CH DOWN	VOLUME DOWN	POWER	OPERATION BUTTON
CH UP	VOLUME UP	ALARM	
PLAY /REPEAT	REW/ REVIEW	-----	
STOP /EJECT	REC/TIME	FF/CUE	


AUDIO CONTROL HEAD UNIT
HEAD AMP C.B.A.
TV/VCR MAIN C.B.A.
CONTROL HEAD
P4092 5
P4092 6
P4091 5
P4091 6
P2601 5
P2601 2
P6202 5
P6202 2
IC6001 (SERVO MICROCONTROLLER)
86
85
PB-ON
REC CTL AMP
ENVELOPE DETECTOR
81
TP6003
(FROM IC3001(40)) ENVELOPE VOLTAGE
POSITIVE PB CTL SLICER
AMP
NEGATIVE PB CTL SLICER
TP6207
89
53
CAPSTAN DIRECTION CONTROL
SELECT
V-LOCK PULSE GENERATOR
31
(TO IC3001(13)) V-LOCK PULSE
CAPSTAN STATOR C.B.A.
CAPSTAN COIL
IC2501 (CAPSTAN MOTOR DRIVE)
Q2501
HALL TRANSIS-TOR
Q2502
HALL TRANSIS-TOR
Q2503
HALL TRANSIS-TOR
POSITION SIGNAL PROCESS
CAPSTAN MOTOR DRIVE
DIFFER-ENTIAL AMP
4
3
6
5
2
1
25
24
22
10
7
12
P2502 4
P2502 10
P2502 8
P6201 4
P6201 10
P6201 8
95
SCHMIT
COUNT DOWN
TP6203
94
93
AMP
PG
SELECT
TP6209
INTEGRATION
10
TP6201
TP6205
24
(TO IC3501(1)) HEAD SW PULSE
PWM
CAPSTAN SPEED COMPENSATOR
IC2505
MR HEAD
2
3
P2502 9
P6201 9
MIX
MIX
CYLINDER/ CAPSTAN PHASE COMPENSATOR
REC CTL / TR MM GENERATOR
100
(FROM IC3001(14)) V-SYNC
CYLINDER UNIT
HEAD AMP C.B.A.
PWM
CYLINDER SPEED COMPENSATOR
(WITH 4 HEAD)
HEAD AMP CONTROL
IC2601 (CYLINDER MOTOR DRIVE)
HALL IC
P3502 4
P3502 6
P3502 3
P3502 2
P3502 1
P2601 9
P2601 7
P2601 10
P2601 11
P2601 12
P6202 9
P6202 7
P6202 10
P6202 11
P6202 12
7
6
1
2
16
PG/FG PULSE GENERATOR
CYLINDER MOTOR DRIVE
4
9
97
PG/ FG SEPARATOR
HEAD SW SIGNAL GENERATOR
ROTARY SIGNAL GENERATOR
29
(TO IC3001(49)) ROTARY SW
FORCED ACCELERATION
4
SLOW /STILL CONTROL
HEAD AMP SELECT SIGNAL GENERATOR
INTEGRATION
9
30
(TO IC3501(32)) HEAD AMP SW
CAP TORQUE LIMIT
52
62
(FROM IC3501(33)) ENVELOPE DET
TP6211
TP6202
CYLINDER MOTOR


REC VIDEO SIGNAL
PB VIDEO SIGNAL
TV PROCESS C.B.A.
3.58MHz
TUNER VIDEO
P5303 12
P5304 7
FROM VIDEO SIGNAL PATH BLOCK DIAGRAM
IC5301 (INPUT SELECT)
PB
LINE
TUNER
MUTE
1
46
48
3
Q5301 BUFFER
Q5651 BUFFER
IC5651 (Y/C SEPARATION)
Y/C SEPARATION
4
15
13
10
Q5652 BUFFER
Q5653, Q5655 BUFFER
Q5654, Q5656 BUFFER
NOT USED
J5602
3.58MHz
IC5351 (INPUT SELECT)
TUNER1
TUNER2
TUNER1 VIDEO
P5303 8
TUNER2 VIDEO
P5304 5
(FROM IC6501 (36)) TINER1(L)/TUNER2(H)
P5304 1
IC5352 (INPUT SELECT)
TUNER1
TUNER2
TUNER
LINE /PB
Q5206 BUFFER
Q5207 BUFFER
(FROM IC3301 (11)) TUNER1(L)/TUNER2(H)
P5304 2
(FROM IC6501 (12)) TUNER VIDEO(L) /LINE & PB VIDEO(H)
P5304 3
IC5353 (INPUT SELECT)
LINE
PB
FROM VIDEO SIGNAL PATH BLOCK DIAGRAM
LINE VIDEO
P5303 6
PB VIDEO
P5303 10
(FROM IC6501 (37)) PB VIDEO(H) /LINE VIDEO(L)
P5304 4
IC5201 (PICTURE IN PICTURE SIGNAL PROCESS)
8
CLAMP
A/D
Y/C SEPA.
DEMOD
CLAMP
DELAY
Y
SYNC SEPA.
AFC
TIMING GENE.
TINT
R-Y
B-Y
VERTICAL FILTER /MUX
RAM
DEMUX
RAM
V-CHIP DATA SLICER
Y
DELAY
R-Y
B-Y
LPF /MYP
MIX
DELAY
DELAY
PHASE SELECT
D/A
ENCODER
D/A
LEVEL DETECT
39
37
53
41
55
44
CLAMP
CLAMP
BIAS
BIAS
1
BIAS
51
48
34
+3.3V
TIMING GENE.
Q5214 ~Q5217 BUFFER
LUMINANCE
Q5210 ~Q5213 BUFFER
CHROMINANCE
TO/FROM TV Y/C PROCESS BLOCK DIAGRAM
Q5204
Q5209
30
(FROM T551 (5)) H-PULSE
Q5205
31
(FROM IC5301 (10)) V-PULSE
Q5208 CLAMP
20 V/H SYNC
X5201 OSC
58
59
VCXO DRIVE
VCXO DRIVE
PHASE DETECT
BURST DATA SAMPLING
A/D
(FROM IC6001 (28)) I²C SERIAL DATA
Q5202 DRIVE
22
(FROM IC6001 (27)) I²C SERIAL CLOCK
Q5203 DRIVE
23
I²C SERIAL INTERFACE


TV PROCESS C.B.A.
VIDEO SIGNAL
CRT C.B.A.
X5601
3.58MHz OSC
IC5301
(LUMINANCE/CHROMINANCE PROCESS)
3.58MHz
TO/FROM
PICTURE IN PICTURE
BLOCK DIAGRAM
CHROMINANCE
LUMINANCE
VCO
CHROMINANCE SIGNAL PROCESS
LUMINANCE SIGNAL PROCESS
MATRIX
OSD CHARACTER MIX/ BLANKING
B
G
R
V. PULSE PROCESS
H. PULSE PROCESS
BLANKING
I²C CONTROL
(FROM IC6001(27))
I²C SERIAL CLOCK
(TO/FROM IC6001(28))
I²C SERIAL DATA
P5301
P351
TP47
RGB AMP
Q351
BLUE AMP
Q352
GREEN AMP
Q353
RED AMP
CRT
TP49
TP50
P8001
TP49
TV/VCR MAIN C.B.A.
IC3301
(CCV/OSD MICROCONTROLLER)
TP3301
DISPLAY CONTROL
X3301
32KHz
OSD-R
OSD-G
OSD-B
OSD-BLANKING
VIDEO MUTE (H)
PIN
P5305
(FROM IC3101 (7))
VIDEO
Q3311
BUFFER
Q3314
COMPARATOR
Q3315
Q3310
P552
P352
HEATER
VERTICAL C.B.A.
P5303
P5302
P451
Q432,Q433,Q434
V POSITION CONTROL
IC451
(VERTICAL DEFLECTION DRIVE)
VERTICAL DEFLECTION DRIVE
Q431
BUFFER
FEED BACK CIRCUIT
P452
VERTICAL DEFLECTION YOKE
HORIZONTAL DEFLECTION YOKE
(TO IC6001 (82))
OVER CURRENT (H)
(FROM Q801 (C))
DISCHARGE
D506
Q541
D541
D544
Q542
+27V
D502
NOT USED
D507
Q502
DRIVE
NOT USED
IC501,
Q581
OVER CURRENT DETECTOR
D503,C513
DC CONVERT
T551
VIDEO+B
HEATER
+B
COLLECTOR
FLYBACK TRANS-FORMER
ANODE
FOCUS
SCREEN
ABL
Q5302
BUFFER
D5304
Q571
BUFFER
Q501,Q551,T501, T502
HORIZONTAL DRIVE
(FROM IC801(4))
+130V

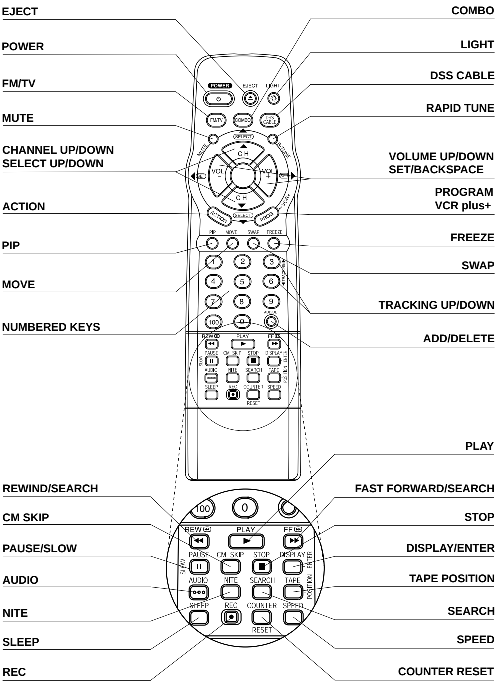
Location of Controls

Remote Control Buttons

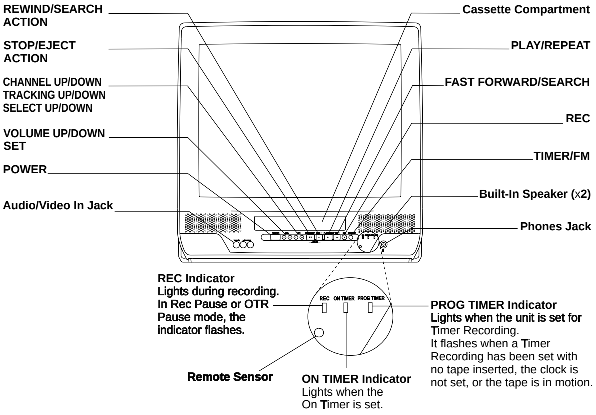
Light Tower™ Illuminated Remote Control

LIGHT button:
When the LIGHT button is pressed, the buttons which can be activated in the selected mode will light and the selected mode button (COMBO or DSS CABLE) will flash for 5 seconds. If no buttons are pressed within 5 seconds, the light will turn off in order to conserve battery power. Also, while holding down the buttons, the selected mode button will flash so you will be able to see, in the dark, which mode has been selected.

EJECT button:
When EJECT is pressed, the tape is ejected from Cassette Compartment.
If EJECT is pressed during recording, the unit will not respond to the command.


EJECT
POWER
FM/TV
MUTE
CHANNEL UP/DOWN
SELECT UP/DOWN
ACTION
PIP
MOVE
NUMBERED KEYS
COMBO
LIGHT
DSS CABLE
RAPID TUNE
VOLUME UP/DOWN
SET/BACKSPACE
PROGRAM
VCR plus+
FREEZE
SWAP
TRACKING UP/DOWN
ADD/DELETE
PLAY
REWIND/SEARCH
FAST FORWARD/SEARCH
CM SKIP
STOP
PAUSE/SLOW
DISPLAY/ENTER
AUDIO
TAPE POSITION
NITE
SEARCH
SLEEP
SPEED
REC
COUNTER RESET

Front View of the unit and Indicators on the Front Panel

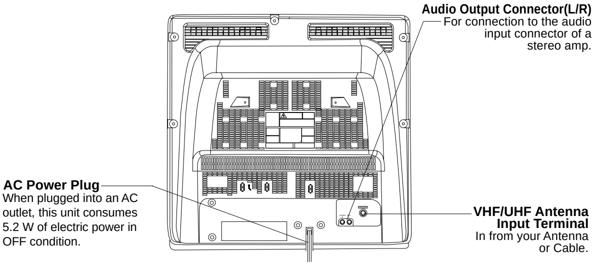

REWIND/SEARCH
ACTION
STOP/EJECT
ACTION
CHANNEL UP/DOWN
TRACKING UP/DOWN
SELECT UP/DOWN
VOLUME UP/DOWN
SET
POWER
Audio/Video In Jack
Cassette Compartment
PLAY/REPEAT
FAST FORWARD/SEARCH
REC
TIMER/FM
Built-In Speaker (x2)
Phones Jack
REC
ON TIMER
PROG TIMER
Remote Sensor

REC Indicator
Lights during recording. In Rec Pause or OTR Pause mode, the indicator flashes.

ON TIMER Indicator
Lights when the On Timer is set.

PROG TIMER Indicator
Lights when the unit is set for Timer Recording.
It flashes when a Timer Recording has been set with no tape inserted, the clock is not set, or the tape is in motion.

Rear View of the unit



Audio Output Connector(L/R)
For connection to the audio input connector of a stereo amp.

AC Power Plug
When plugged into an AC outlet, this unit consumes 5.2 W of electric power in OFF condition.

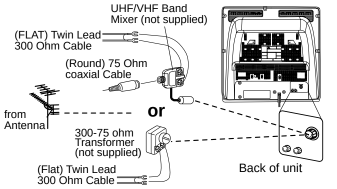
VHF/UHF Antenna Input Terminal
In from your Antenna or Cable.

Connections

Outdoor Antenna Connections

Unhook the antenna from your previous TV or VCR and connect it to the back of the unit as shown in the diagram.
If your antenna system has separate UHF and VHF lead-ins, you need a UHF/VHF Band Mixer (not supplied.)

WARNING:
When using "Nut type" RF coaxial cables, tighten with fingers only. Overtightening may damage terminals.

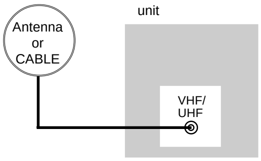

UHF/VHF Band
Mixer (not supplied)
(FLAT) Twin Lead
300 Ohm Cable
(Round) 75 Ohm
coaxial Cable
from
Antenna
or
300-75 ohm
Transformer
(not supplied)
(Flat) Twin Lead
300 Ohm Cable
Back of unit

DSS/Cable box Connections

■ Without a Cable Box

You can;
- record or view unscrambled channels.

You cannot;
- record or view scrambled channels.
- view a channel other than the one selected for any type of recording.

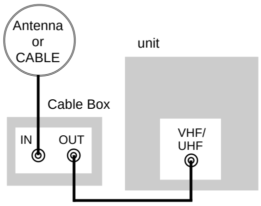

Antenna
or
CABLE
unit
VHF/
UHF

■ With a Cable Box

You can;
- record or view any channel including scrambled channels.

NOTE: Channel selection must be made at the cable box.

You cannot;
- view a channel other than the one selected for any type of recording.
- do a Timer recording of a channel unless you select it at the cable box.


Antenna
or
CABLE
unit
Cable Box
IN
OUT
VHF/
UHF

Note to CABLE System Installer
This reminder is provided to call the CABLE (Cable TV) System Installers attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

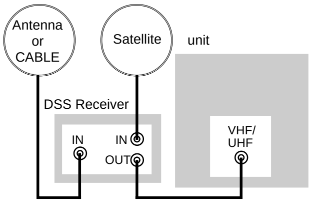
■ With a DSS Receiver

You can;
- record or view any channel including scrambled channels.

NOTE: Channel selection must be made at the DSS Receiver.

You cannot;
- view a channel other than the one selected for any type of recording.
- do a Timer recording of a channel unless you select it at the DSS box.

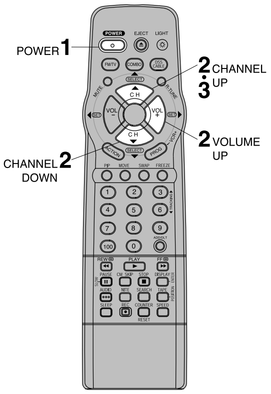
NOTE: The DSS receiver must be turned off to view programs from a cable box or antenna. See the DSS manual for details.

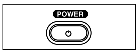

Antenna
or
CABLE
Satellite
unit
DSS Receiver
IN
IN
OUT
VHF/
UHF

One Time Setup

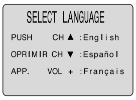
When the unit is turned on the first time, setup mode is entered automatically.

Process of Setup
Language ⇨ **channel** ⇨ **Clock**


POWER 1
2
3
CHANNEL
UP
2 VOLUME
UP
CHANNEL 2
DOWN

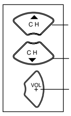
1


Press POWER* on the remote or unit.

2


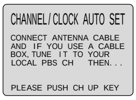
SELECT LANGUAGE
PUSH CH ▲ :English
OPRIMIR CH ▼ :Español
APP. VOL + :Français

Select the language.



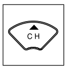
- CH ▲ for English
- CH ▼ for Spanish (Español)
- VOL + for French (Français)

- If wrong language is set, complete "Reset all unit Memory Functions" steps.
- If you use a cable box, it must be left on.

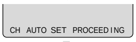
3


CHANNEL/CLOCK AUTO SET
CONNECT ANTENNA CABLE AND IF YOU USE A CABLE BOX, TUNE IT TO YOUR LOCAL PBS CH THEN. . .
PLEASE PUSH CH UP KEY

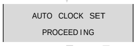
Start Channel Auto Set and Clock Auto Set.



Press CH ▲.

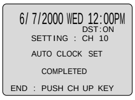


CH AUTO SET PROCEEDING

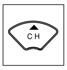


AUTO CLOCK SET
PROCEEDING

Case 1 (Setup completed)



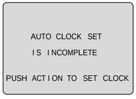
6/ 7/2000 WED 12:00PM
DST:ON
SETTING : CH 10
AUTO CLOCK SET
COMPLETED
END : PUSH CH UP KEY



Press CH ▲ to exit.
- If your area observes daylight saving time, but you would like to turn the DST feature off, complete the "To Set or Reset the Clock" step and set DST: OFF.

- If your area observes daylight saving time and DST is set to ON, but the time is incorrect; complete the Time Zone Adjust steps.

Case 2 (Setup incomplete)



AUTO CLOCK SET
IS INCOMPLETE
PUSH ACTION TO SET CLOCK

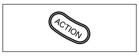
See Case 2 next section.

IMPORTANT NOTE FOR AUTO CLOCK SET
- Auto clock set is performed the first time when the unit is turned off each day. If used, a cable box must be left on and tuned to the PBS channel at the time the unit power is turned off if you want auto clock set to be done.
- If using a DSS receiver, it must be turned off for auto clock set.
- If a Cable Box or DSS receiver is connected to the unit via Audio/Video Jacks, an RF coaxial cable must also be connected for auto clock set and channel auto set features.
- If for any reason the time is changed manually, automatic time correction will not occur.

One Time Setup (continued)

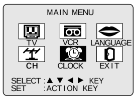
Case 1 **Set TIME ZONE ADJUST.**

1 **Display MAIN MENU.**

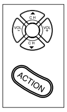


Press ACTION.

2 **Display SET CLOCK screen.**

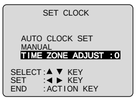


MAIN MENU
TV VCR LANGUAGE
CH CLOCK EXIT
SELECT :▲ ▼ ◀ ▶ KEY
SET :ACTION KEY

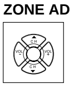

CH
VOL
VOL
CH
ACTION

1) Press ▲▼◀▶ to select "CLOCK"
2) Press ACTION to display.

3 **Select TIME ZONE ADJUST.**



SET CLOCK
AUTO CLOCK SET
MANUAL
TIME ZONE ADJUST :0
SELECT :▲ ▼ KEY
SET :◀ ▶ KEY
END :ACTION KEY


CH
VOL
VOL
CH

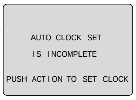
1) Press ▲▼ to select.
2) Press ◀▶ to subtract or add hour(s) as necessary.

4 **End setup.**

Press ACTION twice.
- TIME ZONE ADJUST returns to "0" if clock is set manually.

Case 2 **Clock Setup is Incomplete Set the clock manually.**

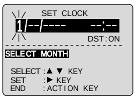
a **Display SET CLOCK screen.**



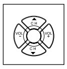
AUTO CLOCK SET
IS INCOMPLETE
PUSH ACTION TO SET CLOCK

Press ACTION to exit this mode.

b **Set the clock manually.**



SET CLOCK
1/--/---- --:--
DST:ON
SELECT MONTH
SELECT :▲ ▼ KEY
SET :▶ KEY
END :ACTION KEY

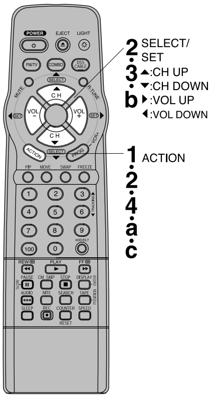

CH
VOL
VOL
CH

1) Press ▲▼ to select the month.
2) Press ▶ to set.
- Likewise set date, year, time, and DST (Daylight Saving Time.)

To Make Corrections, repeatedly press ◀▶ to move to error, then correct.

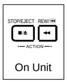
c **End setup.**

Press ACTION twice (Clock starts.)


2 SELECT/SET
3 ▲:CH UP
▼:CH DOWN
b ▶:VOL UP
◀:VOL DOWN
1 ACTION
2
4
a
c

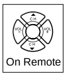
Notes
- This unit's calendar is accurately maintained up to Dec. 31, 2089, 11:59 PM.
- Channel auto set selects normal TV or Cable channels depending on your unit hookup.

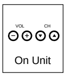
ACTION key on the unit


STOP/EJECT
REW/
ACTION
On Unit

You can operate the menu screen using unit buttons.
To display the menu, press STOP/EJECT and REW together with no tape inserted.
To exit the menu, repeat above with or without tape inserted.

Using ▲▼◀▶ keys


CH
VOL
VOL
CH
On Remote


VOL
CH
On Unit

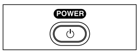
▲ : CH UP
▼ : CH DOWN
▶ : VOLUME UP
◀ : VOLUME DOWN

Whenever the menu or program screen is displayed, CHANNEL UP/DOWN function as ▲▼ and VOLUME UP/DOWN function as ◀▶ only.

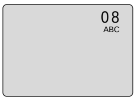
TV Operation (Picture in Picture, Two Tuners)

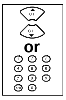
Basic TV Operation

1 **Press POWER* on the remote or unit.**



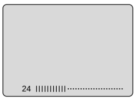
2 **Select a channel.**

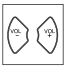




Use CH ▲▼ or NUMBERED keys.

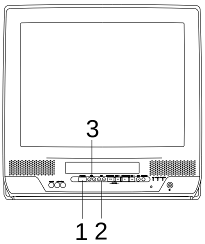
3 **Adjust volume.**





Press VOL + −.

☑ **Check list before you begin.**
☐ All connections are made.
☐ Your unit is plugged in.

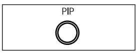


Picture in Picture (PIP) Operation

You can view two pictures simultaneously using two tuners and picture in picture (PIP) display function.

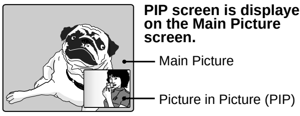
Display Picture in Picture (PIP) screen

A **Set PIP.**



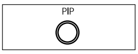
Press PIP.

B **PIP screen is displayed on the Main Picture screen.**


Main Picture
Picture in Picture (PIP)

< Example >

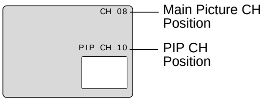
C **Return to the normal screen.**

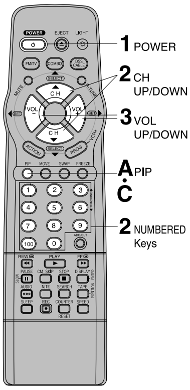


Press PIP.

Select channel / Adjust Volume in PIP mode

In PIP mode, select a channel using CH ▲▼ or NUMBERED keys and adjust the volume using VOL + - for the Main Picture only. To adjust the PIP, you must first press SWAP to switch it to the Main Picture.


CH 08
PIP CH 10
Main Picture CH Position
PIP CH Position

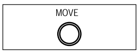

1 POWER
2 CH UP/DOWN
3 VOL UP/DOWN
A
C PIP
2 NUMBERED Keys

Notes
- PIP is not available in FM mode, while V-Chip control is active, while a LINE input has no signal, or while a blue-back (PROG, ACTION, MENU) screen is displayed.
- PIP position and size you set will be retained.
- The MOVE and SWAP buttons are inoperative when PIP screen is off.

TV Operation (Picture in Picture, Two Tuners) (continued)

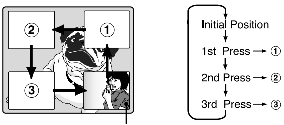
Move screen

You can move the PIP screen to four positions.



Select PIP position.

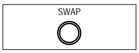
Press MOVE repeatedly to select PIP position.


②
①
③
Initial Position
1st Press → ①
2nd Press → ②
3rd Press → ③

Initial Position

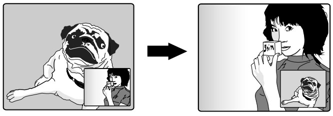
SWAP Picture

You can switch the PIP and Main Picture source.



Swap the Picture source.

Press SWAP.

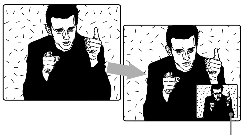


FREEZE Picture into PIP

You can create a freeze frame PIP of the Main Picture.

Freeze the Main Picture.

Press FREEZE.



Still Picture

Change PIP back to a moving picture.

Press FREEZE.

- With PIP displayed, each press of FREEZE will freeze and unfreeze the PIP.

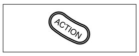
To remove PIP, press the PIP button.

Notes
- A freeze frame PIP reverts to a normal (moving) picture when the PIP and the Main Picture are swapped.
- The FREEZE function works the same way during playback.

Picture in Picture (PIP) SIZE Setup

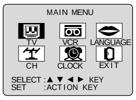
You can choose "NORMAL" or "SMALL" PIP size.

1 **Display MAIN MENU.**

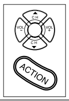


Press ACTION.

2 **Display SET UP TV screen.**

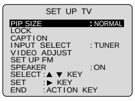


MAIN MENU
TV VCR LANGUAGE
CH CLOCK EXIT
SELECT :▲ ▼ ◀ ▶ KEY
SET :ACTION KEY

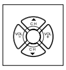

CH
VOL
VOL
CH
ACTION

1) Press ▲▼◀▶ to select "TV."
2) Press ACTION to display.

3 **Select PIP SIZE .**



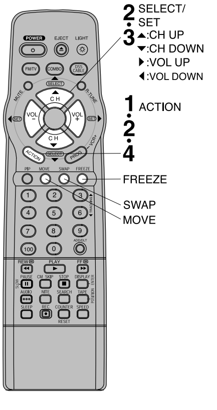
SET UP TV
PIP SIZE :NORMAL
LOCK
CAPTION
INPUT SELECT :TUNER
VIDEO ADJUST
SET UP FM
SPEAKER :ON
SELECT :▲ ▼ KEY
SET :▶ KEY
END :ACTION KEY


CH
VOL
VOL
CH

1) Press ▲▼ to select "PIP SIZE."
2) Press ▶ to set "NORMAL" or "SMALL."

4 **End setup.**

Press ACTION twice.


2 SELECT/SET
3 ▲:CH UP
▼:CH DOWN
▶:VOL UP
◀:VOL DOWN
1 ACTION
2
4
FREEZE
SWAP
MOVE

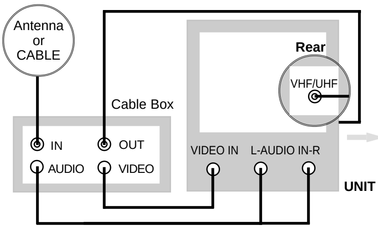
Timer Programming using VCR Plus+® System

VCR Plus+ System is...
a feature that allows you to set most items of a Timer Recording by simply entering a special code number (PlusCode) found in TV GUIDE and selected newspaper TV listings.

Process of Recording
Connection ⇨ **Setup** ⇨ **Programming**

Choose your connection type from the following diagrams

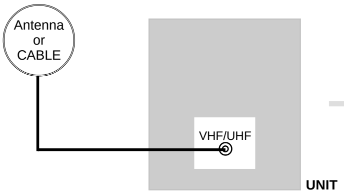
■ CABLE BOX → UNIT


Antenna or CABLE
Cable Box
IN
OUT
AUDIO
VIDEO
Rear
VHF/UHF
VIDEO IN
L-AUDIO IN-R
UNIT

Set up on Cable Box Setup Section

Programming on VCR Plus+ Programming Section

■ ANTENNA or CABLE → UNIT


Antenna or CABLE
VHF/UHF
UNIT

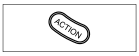
Set up on VCR Plus+ Channel Setup Section

Timer Programming using VCR Plus+® System (continued)

Cable Box Setup

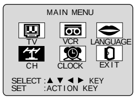
Process of Recording

Connection ⇨ **Setup** ⇨ Programming

1 

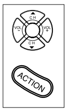
Display MAIN MENU.

Press ACTION*.

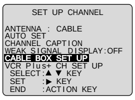
2 

```
        MAIN MENU
  TV      VCR    LANGUAGE
  CH     CLOCK     EXIT
SELECT :▲ ▼ ◀ ▶  KEY
SET    :ACTION KEY
```

Display SET UP CHANNEL screen.

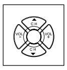


1) Press ▲▼◀▶ to select "CH."
2) Press ACTION to display.

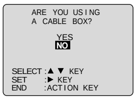
3 

```
      SET UP CHANNEL

ANTENNA  :  CABLE
AUTO SET
CHANNEL CAPTION
WEAK SIGNAL DISPLAY:OFF
CABLE BOX SET UP
VCR Plus+ CH SET UP
 SELECT:▲ ▼ KEY
 SET   :▶ KEY
 END   :ACTION KEY
```

Select CABLE BOX SET UP.

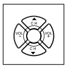


1) Press ▲▼ to select.
2) Press ▶ to display.

4 

```
     ARE YOU USING
     A CABLE BOX?

         YES
         NO

 SELECT:▲ ▼ KEY
 SET   :▶ KEY
 END   :ACTION KEY
```

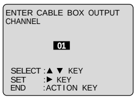
Select "YES" or "NO."



1) Press ▲▼ to select "YES" or "NO."
2) Press ▶ to set.

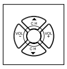
If you select...

- **"YES" ➔ Step 5.**
- **"NO" ➔ Press ACTION ➔ Go to VCR Plus+ Channel Setup.**

5 

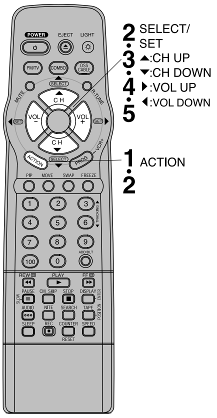
```
ENTER CABLE BOX OUTPUT
CHANNEL

          01

 SELECT:▲ ▼ KEY
 SET   :▶ KEY
 END   :ACTION KEY
```

Select Cable Box output channel number.



1) Press ▲▼ to select.
2) Press ▶ to enter.

- If necessary, refer to your cable box manual.
- If you are using Audio/Video jack connection for your cable box, select and set "VIDEO OUT" as the output channel.



VCR Plus+ and PlusCode are registered trademarks of Gemstar Development Corporation.
The VCR Plus+ system is manufactured under license from Gemstar Development Corporation.

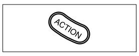
VCR Plus+ Channel Setup is... necessary to program the unit with local channel information for proper VCR Plus+ operation.

Process of Recording

Connection ⇨ **Setup** ⇨ Programming

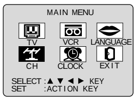
VCR Plus+ Channel Setup

At first, do Channel Setup Preparations below right.

1 

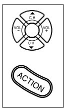
Display MAIN MENU.

Press ACTION*.

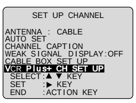
2 

```
        MAIN MENU
  TV      VCR    LANGUAGE
  CH     CLOCK     EXIT
SELECT :▲ ▼ ◀ ▶  KEY
SET    :ACTION KEY
```

Display SET UP CHANNEL screen.

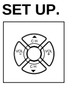


1) Press ▲▼◀▶ to select "CH."
2) Press ACTION to display.

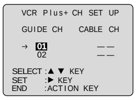
3 

```
      SET UP CHANNEL

ANTENNA  :  CABLE
AUTO SET
CHANNEL CAPTION
WEAK SIGNAL DISPLAY:OFF
CABLE BOX SET UP
VCR Plus+ CH SET UP
 SELECT:▲ ▼ KEY
 SET   :▶ KEY
 END   :ACTION KEY
```

Select VCR Plus+ CH SET UP.

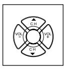


1) Press ▲▼ to select.
2) Press ▶ to display.

4 

```
   VCR Plus+ CH SET UP

   GUIDE CH    CABLE CH

  → 01           ——
    02           ——

 SELECT:▲ ▼ KEY
 SET   :▶ KEY
 END   :ACTION KEY
```

Enter VCR Plus+ channels.

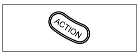


1) Press ▶ to move cursor to right column.
2) Press ▲▼ to change the CABLE CH number.
3) Press ◀ to set.
4) Press ▲▼ to scroll up/down the GUIDE CH column.

- Repeat step **4** until list is complete.

To Make Corrections

Press ▲▼ and ▶ to move to error, then ▲▼ to change, or ADD/DLT to erase number.

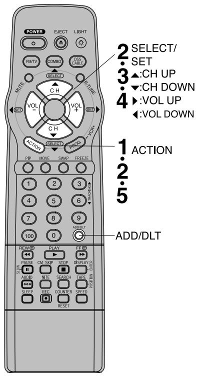
5 

End the setup.

Press ACTION three times.

Notes

- Make each entry within 5 minutes or the unit will leave this mode.
- Once local channels have been programmed, they will stay in memory, even in the case of a power failure.



Channel Setup Preparations

To complete step 4 left, make a local channel list (see example below.)

You will need the following:

- A normal TV and/or Cable stations line up and the channel numbers your receive them on.
- A list of Guide (VCR Plus+) channel numbers for stations you receive (see TV Guide and selected newspapers.)

1 Make a 3-column chart. In the left column, write all station names you receive.
2 In the middle column, write each station's Guide (VCR Plus+) number.
3 In the right column, write the channel number your TV receives the station on.

< EXAMPLE ONLY >

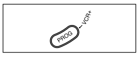
Broadcast or Cable Station Name	Assigned Guide (VCR Plus+) Channel no.	Channel no. your TV receives the station on
HBO	33	15
Nickelodeon	38	20
CBS	34	04
FOX	11	

Timer Programming using VCR Plus+® System (continued)

VCR Plus+ System Programming

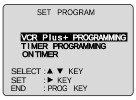
Process of Recording

Connection ⇨ Setup ⇨ **Programming**

1 

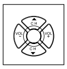
Display SET PROGRAM screen.

Press PROG/VCR+.

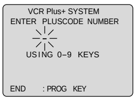
2 

```
      SET  PROGRAM

   VCR Plus+ PROGRAMMING
   TIMER PROGRAMMING
   ON TIMER

 SELECT :▲ ▼  KEY
 SET    :▶ KEY
 END    : PROG  KEY
```

Select VCR Plus+ PROGRAMMING.

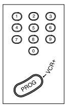


1) Press ▲▼ to select.
2) Press ▶ to display.

3 

```
    VCR Plus+ SYSTEM
 ENTER  PLUSCODE NUMBER
         -
    USING 0–9  KEYS


 END     : PROG  KEY
```

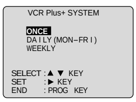
Enter PlusCode programming number.



1) Press NUMBERED keys.
2) Press PROG/VCR+ when finished.

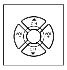
To Make Corrections

Press ◀ repeatedly to delete the PlusCode programming number.

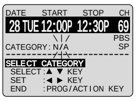
4 

```
    VCR Plus+ SYSTEM

     ONCE
     DAILY (MON–FRI)
     WEEKLY

 SELECT :▲ ▼  KEY
 SET    :▶ KEY
 END    : PROG  KEY
```

Set Record Frequency.

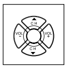


1) Press ▲▼ to select.
2) Press ▶ to set.

5 

```
DATE     START    STOP    CH
 28 TUE 12:00P  12:30P   69
                         PBS
CATEGORY: N/A             SP
-----------------------------
SELECT CATEGORY
 SELECT :▲ ▼  KEY
 SET    :◀ ▶  KEY
 END    :PROG/ACTION KEY
```

Set Category and Record speed.



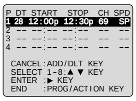
1) Press ▲▼ to select.
2) Press ▶ to set.

Select desired type:

- Categories ➔ N/A (not applicable), SPORTS, MOVIE, COMEDY MUSIC, or DRAMA
- Speed ➔ SP, LP, or SLP

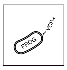
To Make Corrections

Press ◀ ▶ to move the cursor and ▲▼ to make the correction.

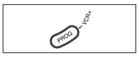
6 

```
P DT START   STOP   CH SPD
1 28 12:00p 12:30p  69  SP
2 -- --:-- --:--    --  --
3 -- --:-- --:--    --  --
4 -- --:-- --:--    --  --

 CANCEL:ADD/DLT KEY
 SELECT 1-8:▲ ▼ KEY
 ENTER  :▶ KEY
 END    :PROG/ACTION KEY
```

End programming.



Press PROG/VCR+ (or ACTION.)

7 

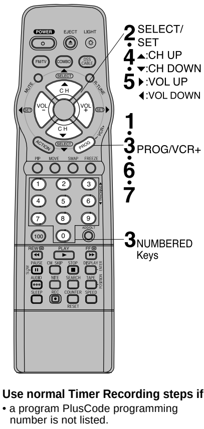
Exit this mode.

Press PROG/VCR+ (or ACTION) twice.

- PROG TIMER indicator lights on the unit.

Check list before you begin.

☐ The clock is set to correct time.
☐ VCR Plus+ System Setup is complete.



Use normal Timer Recording steps if:

- a program PlusCode programming number is not listed.
- program, such as a sporting event, may run over scheduled stop time.

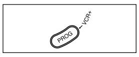
Notes

- You can obtain unlisted PlusCode programming numbers by calling 1-900-454-7587. Call costs approximately $.95 per minute.
- Avoid overlapping program times.
- If you're using a cable box, make sure that it is turned to the desired channel and the power is left on for timer recording.
- Timer programs memory capacity is 8. To add more programs, please first clear other programs.

TV Timer Features

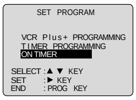
ON-TIMER with Alarm

This unit can be set to automatically power on in one of 3 modes (TV, Playback, or FM radio.) You can also combine the On-Timer with a one minute alarm that gradually increases in volume.

1 

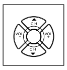
Display SET PROGRAM screen.

Press PROG/VCR+*.

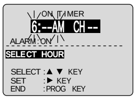
2 

```
      SET  PROGRAM

   VCR Plus+ PROGRAMMING
   TIMER PROGRAMMING
   ON TIMER

 SELECT :▲ ▼  KEY
 SET    :▶ KEY
 END    : PROG  KEY
```

Select ON TIMER.

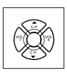


1) Press ▲▼ to select.
2) Press ▶ to display.

3 

```
      ON TIMER
    6:--AM  CH--
 ALARM:ON
-------------------
SELECT HOUR

 SELECT :▲ ▼  KEY
 SET    :▶ KEY
 END    :PROG  KEY
```

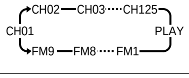
Set the ON-TIMER TIME.

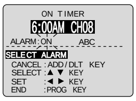


1) Press ▲▼ to select.
2) Press ▶ to set.

- Make sure a tape is inserted if Playback mode is selected.
- See "FM Radio" for instructions on how to preset FM stations.

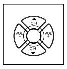
- ON-TIMER mode selection order



4 

```
      ON TIMER
    6:00AM  CH08
 ALARM:ON       ABC
-------------------
SELECT ALARM
 CANCEL :ADD/DLT  KEY
 SELECT :▲ ▼  KEY
 SET    :◀ ▶  KEY
 END    :PROG  KEY
```

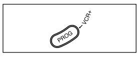
Set Alarm.



Press ▲▼ to select "ON" or "OFF."

When "ON" is selected,
an alarm will gradually increase in volume for one minute or until canceled by pressing any button (including VOL + –.)

To Make Corrections,
use ▲▼ and ◀ ▶ to move back and correct as necessary.

5 

Set ON TIMER.

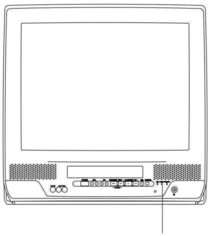
Press PROG/VCR+.

- "ON TIMER SET" is displayed.
- ON TIMER indicator lights on the unit.

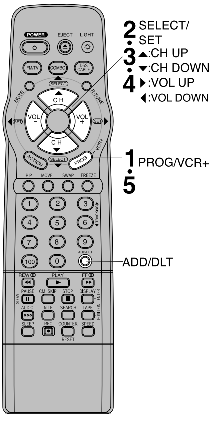
To Cancel ON-TIMER set,
Repeat steps **1** and **2**. Then, press ADD/DLT to clear the time in step **3**. Now, press PROG/VCR+ to end.
"ON TIMER END" appears on-screen for a few seconds.

Check list before you begin.

☐ The clock is set to correct time.



ON TIMER indicator



Note

If no button on the remote or unit (including a button used to turn off the alarm) is pressed within 60 minutes after unit turns itself on, it will turn itself back off.

TV Timer Features (continued)

SLEEP TIMER

This unit can be set for auto power off.

Set SLEEP TIMER.
Press SLEEP repeatedly.

- Pressing DISPLAY with sleep timer set displays remaining time.

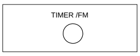
SLEEP TIMER 30
↓
SLEEP TIMER 60
↓
SLEEP TIMER 90
↓
SLEEP TIMER 00

To Cancel, press SLEEP repeatedly until "SLEEP TIMER 00" appears.

INSTANT ALARM

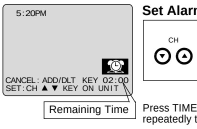
The feature allows you to set a timer alarm for up to 60 minutes.
Useful for when you are cooking and need to leave the kitchen.

1



Display INSTANT ALARM screen.
Press TIMER/FM on the unit to display.

2

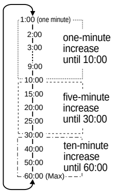

5:20PM
CANCEL : ADD/DLT KEY 02:00
SET : CH ▲ ▼ KEY ON UNIT
Remaining Time
CH

Set Alarm.

Press CH ▲▼ on the unit to select time while "CANCEL" and "SET" are displayed (see below.)

Press TIMER/FM on the unit repeatedly to change display as follows.

TV (or LINE) → INSTANT ALARM Screen Display TV (or LINE) → FM → INSTANT ALARM Screen Display FM


1:00 (one minute)
2:00
3:00
9:00
one-minute increase until 10:00
10:00
15:00
20:00
25:00
five-minute increase until 30:00
30:00
40:00
50:00
ten-minute increase until 60:00
60:00 (Max)

To cancel, press ADD/DLT while "CANCEL" and "SET" are displayed.

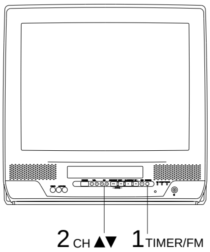
To increase timer in progress, Press CH ▲▼ on the unit to restart countdown rounded up to next 1, 5, or 10 minute interval while "CANCEL" and "SET" are displayed.

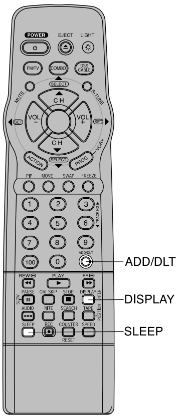
<Example>

- If current time remaining is 12:15, countdown will restart from 15:00.
- If current time remaining is 9:15, countdown will restart from 10:00.

3 **Alarm will sound at 0: 00.**
Press any button to stop.

- The volume of the alarm gradually increases for one minute and then continues to beep until any button is pressed.


2 CH ▲▼
1 TIMER/FM


ADD/DLT
DISPLAY
SLEEP

Note

While timer function is in progress, you can change channels on the unit with CH ▲▼ while "CANCEL" and "SET" are not displayed.

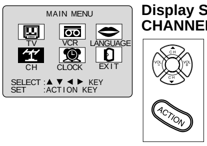
Special VCR Features

Preset Caption

1

Display MAIN MENU.
Press ACTION*.

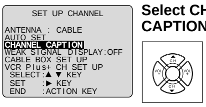
2


MAIN MENU
TV
VCR
LANGUAGE
CH
CLOCK
EXIT
SELECT : ▲ ▼ ◀ ▶ KEY
SET : ACTION KEY
ACTION

Display SET UP CHANNEL screen.

1) Press ▲▼◀▶ to select "CH."
2) Press ACTION to display.

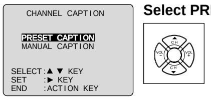
3


SET UP CHANNEL
ANTENNA : CABLE
AUTO SET
CHANNEL CAPTION
WEAK SIGNAL DISPLAY:OFF
CABLE BOX SET UP
VCR Plus+ CH SET UP
SELECT : ▲ ▼ KEY
SET : ▶ KEY
END : ACTION KEY

Select CHANNEL CAPTION.

1) Press ▲▼ to select.
2) Press ▶ to display.

4

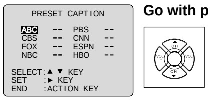

CHANNEL CAPTION
PRESET CAPTION
MANUAL CAPTION
SELECT : ▲ ▼ KEY
SET : ▶ KEY
END : ACTION KEY

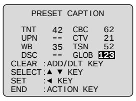
Select PRESET CAPTION.

1) Press ▲▼ to select.
2) Press ▶ to display.

- To create your own captions, go to "Manual Caption."

5


PRESET CAPTION
ABC --
PBS --
CBS --
CNN --
FOX --
ESPN --
NBC --
HBO --
SELECT : ▲ ▼ KEY
SET : ▶ KEY
END : ACTION KEY


PRESET CAPTION
TNT 42
CBC 62
UPN --
CTV 21
WB 35
TSN 52
DSC --
GLOB 123
CLEAR : ADD/DLT KEY
SELECT : ▲ ▼ KEY
SET : ◀ KEY
END : ACTION KEY

Go with preset captions.

1) Press ▲▼ to select a station.
2) Press ▶ to move cursor to the right.
3) Press ▲▼ to select channel number.
4) Press ◀ to set.

- Repeat step **5** until the Caption List is complete.

To Make Corrections
Press ▲▼, then ▶ to select channel number.
Press ▲▼ to change, or ADD/DLT to delete.

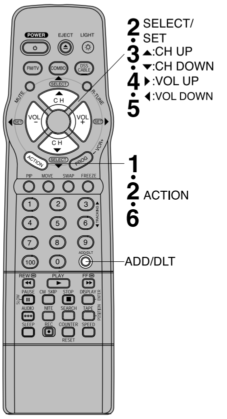
6

End setup.
Press ACTION four times.

Channel Caption is ...
Station names, e.g. ABC, TNN, etc. so that they will appear when a channel is selected. Choose 24 preset names (Preset Caption), or make up to 10 names of your own (Manual Caption.)

☑ **Check list before you begin.**

☐ You need a list of stations and the channel numbers you receive them on.

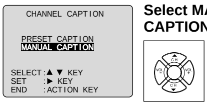

2 SELECT/ SET
3 ▲:CH UP
▼:CH DOWN
4 ▶:VOL UP
5 ◀:VOL DOWN
1
2 ACTION
6
ADD/DLT

Special VCR Features (continued)

Manual Caption

1 **Do "Preset Caption" steps 1~3.**

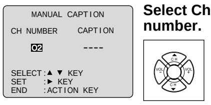
2


CHANNEL CAPTION
PRESET CAPTION
MANUAL CAPTION
SELECT : ▲ ▼ KEY
SET : ▶ KEY
END : ACTION KEY

Select MANUAL CAPTION.

1) Press ▲▼ to select.
2) Press ▶ to display.

3


MANUAL CAPTION
CH NUMBER
CAPTION
02

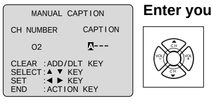
SELECT : ▲ ▼ KEY
SET : ▶ KEY
END : ACTION KEY

Select Channel number.

1) Press ▲▼ to select CH NUMBER.
2) Press ▶ to move cursor to the right.

- Channels already set and channels deleted from Channel Memory are not displayed.
- You can set a total of ten channel captions with up to four characters each.

4


MANUAL CAPTION
CH NUMBER
CAPTION
02
A---
CLEAR : ADD/DLT KEY
SELECT : ▲ ▼ KEY
SET : ◀ ▶ KEY
END : ACTION KEY

Enter your caption.

1) Press ▲▼ to select.
2) Press ▶ to enter.

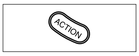
- Characters change in the following order.

→A— B— C······ Z— BLANK— — —&←
→9······ 2 —1— 0 —/ —!←

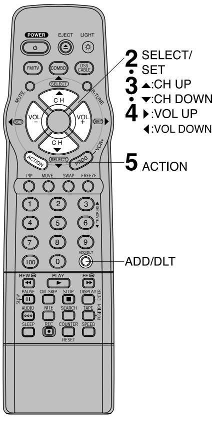
- Press ◀ repeatedly to move the cursor to "CH NUMBER." Repeat steps **3** and **4** as desired.

To Make Corrections
Press ▲▼, then ▶ to select channel number.
Press ▲▼ to change, or ADD/DLT to delete.

5



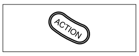
End setup.
Press ACTION four times.


2 SELECT/ SET
3 ▲:CH UP
▼:CH DOWN
4 ▶:VOL UP
◀:VOL DOWN
5 ACTION
ADD/DLT

Time Stamp Feature

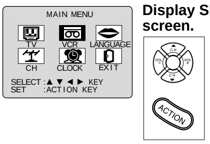
This unit writes program data (see example below) for about the first 10 seconds of every recording.
The information is then displayed during the first 10 seconds of playback.
To change the data, see "Changing Time Stamp Data" section.

1



Display MAIN MENU.
Press ACTION*.

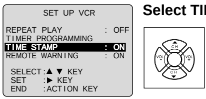
2


MAIN MENU
TV
VCR
LANGUAGE
CH
CLOCK
EXIT
SELECT : ▲ ▼ ◀ ▶ KEY
SET : ACTION KEY
ACTION

Display SET UP VCR screen.

1) Press ▲▼◀▶ to select "VCR."
2) Press ACTION to display.

3


SET UP VCR
REPEAT PLAY : OFF
TIMER PROGRAMMING
TIME STAMP : ON
REMOTE WARNING : ON
SELECT : ▲ ▼ KEY
SET : ▶ KEY
END : ACTION KEY

Select TIME STAMP.

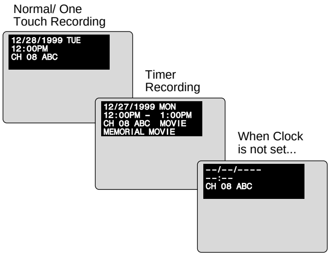
1) Press ▲▼ to select.
2) Press ▶ to set "ON" or "OFF."

- When "OFF" is selected, the program data is written on the tape, but will not be displayed.

4

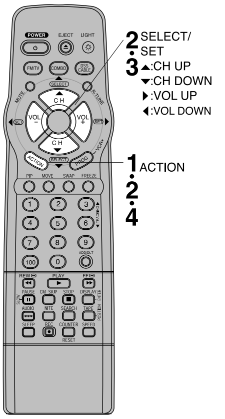
Return to normal screen.
Press ACTION twice.

<Time Stamp Example >


Normal/ One Touch Recording
12/28/1999 TUE
12:00PM
CH 08 ABC
Timer Recording
12/27/1999 MON
12:00PM - 1:00PM
CH 08 ABC MOVIE
MEMORIAL MOVIE
When Clock is not set...
--/--/----
--:--
CH 08 ABC

☑ **Check list before you begin.**

☐ The clock is set to correct time.
☐ The record tab is in place.


2 SELECT/ SET
3 ▲:CH UP
▼:CH DOWN
▶:VOL UP
◀:VOL DOWN
1 ACTION
2
4

Special VCR Features (continued)

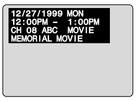
Changing Time Stamp Data

You may change the time stamp data (Date, Time, Channel, Category, and Notes) as desired.

1 **Display Time Stamp Data.**

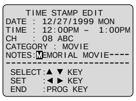
1) Insert cassette with record tab.
2) Press PLAY.

2 **Display TIME STAMP EDIT.**


```
12/27/1999 MON
12:00PM -  1:00PM
CH 08 ABC  MOVIE
MEMORIAL MOVIE
```

Press PROG/VCR+ while the data is displayed in playback mode.

3 **Change Time Stamp Data.**


```
    TIME STAMP EDIT
DATE  :  12/27/1999 MON
TIME  :  12:00PM -  1:00PM
CH    :  08 ABC
CATEGORY : MOVIE
NOTES:MEMORIAL MOVIE----
------------------------
  SELECT:▲ ▼ KEY
  SET   :◀ ▶ KEY
  END   :PROG KEY
```

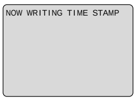
1) Press ▲▼ to select.
2) Press ▶ or ◀ to enter and continue.
   - Characters in NOTES will change in the following order.

→A— B— C······ Z— BLANK— — —&
→9······ 2 —1— 0 —/—!

3) Repeat 1) and 2) as needed.

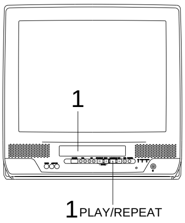
To Make Corrections
Press ◀ ▶ to move to the incorrect entry, then press ▲▼ to make the correction.

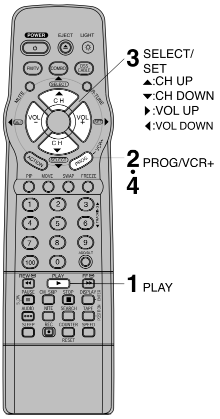
4 **Write the new data.**


```
NOW WRITING TIME STAMP
```

Press PROG/VCR+.

- After the data is written, the unit automatically goes into Stop mode.
- You cannot use POWER or REC button while "NOW WRITING TIME STAMP" is displayed.





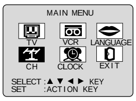
Weak Signal Display ON/OFF

When "ON" is selected, the picture is displayed even when a broadcast signal is weak or non-existent.

1 **Display MAIN MENU.**

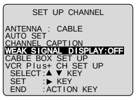
Press ACTION*.

2 **Display SET UP CHANNEL screen.**


```
       MAIN MENU
  TV     VCR   LANGUAGE
  CH    CLOCK   EXIT
 SELECT:▲ ▼ ◀ ▶  KEY
 SET   :ACTION KEY
```

1) Press ▲▼◀▶ to select "CH."
2) Press ACTION to display.

3 **Select WEAK SIGNAL DISPLAY.**

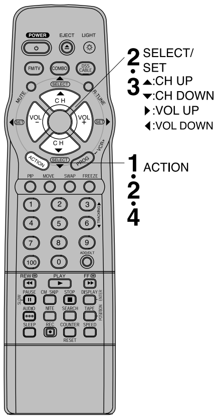

```
     SET UP CHANNEL

ANTENNA : CABLE
AUTO SET
CHANNEL CAPTION
WEAK SIGNAL DISPLAY:OFF
CABLE BOX SET UP
VCR Plus+ CH SET UP
 SELECT:▲ ▼ KEY
 SET   :▶ KEY
 END   :ACTION KEY
```

1) Press ▲▼ to select.
2) Press ▶ to set "ON" or "OFF."

Notes

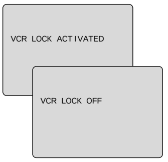
- "ON" = Picture is displayed regardless of signal condition, and may not always be clearly visible.
  "OFF" = Screen turns solid blue when signal is absent or weak.
- If unit is connected to equipment which has blue back feature, selecting "ON" will have no effect on the other equipment.

4 **Return to the normal screen.**
Press ACTION twice.



VCR Lock

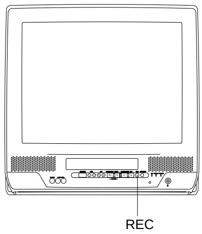
All operations are prohibited except Timer recording and tape eject. Useful for families with small children.


```
VCR LOCK ACTIVATED
```
```
VCR LOCK OFF
```

To turn "ON."
In stop mode, hold down REC on the unit without a cassette inserted for 7 seconds.

To turn "OFF."
Repeat above with or without cassette.

- VCR Lock is canceled automatically after about 24 hours if clock is set.



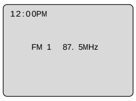
FM Radio

FM Radio Setup

1 **Display FM radio mode.**

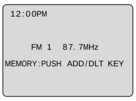
Press FM/TV* on the remote or TIMER/FM twice on the unit.

2 **Select the FM number.**

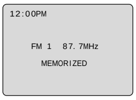

```
12:00PM

  FM 1   87. 5MHz
```

Press a NUMBERED key (1~9.)

3 **Set the radio station.**


```
12:00PM

  FM 1   87. 7MHz
MEMORY:PUSH  ADD/DLT KEY
```

1) Press CH ▲▼ to select the desired radio station.
   (Each press changes frequency 200 kHz.)
2) Press ADD/DLT to set.


```
12:00PM

  FM 1   87. 7MHz
    MEMORIZED
```

Quick Station Scan
Hold down CH ▲ or ▼ for a few seconds, then release to scan for FM stations in your area.
- To cancel, press CH ▲ or ▼ while in search mode.

To Make Corrections,
select station with a NUMBERED key, then do step **3** again.

To exit FM mode, press FM/TV on the remote or TIMER/FM twice on the unit.

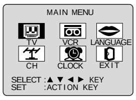
FM ANTENNA Setup

Make sure FM tuning is done correctly (See FM Radio Setup.)

a **Display MAIN MENU.**

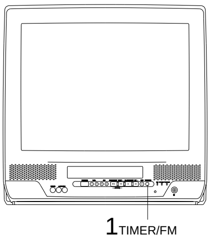
Press ACTION.

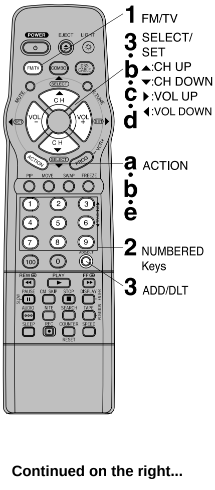
b **Display SET UP TV screen.**


```
       MAIN MENU
  TV     VCR   LANGUAGE
  CH    CLOCK   EXIT
 SELECT:▲ ▼ ◀ ▶  KEY
 SET   :ACTION KEY
```

1) Press ▲▼◀▶ to select "TV."
2) Press ACTION to display.

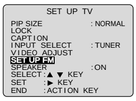
FM Radio is ...
This unit has an FM radio with built-in antenna, 9 station preset, and a band range of 87.5 ~ 108.1 MHz. You can even set the On-Timer to wake up to your favorite radio station.





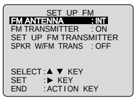
Continued on the right...

c **Select SET UP FM.**


```
       SET UP TV
PIP SIZE            : NORMAL
LOCK
CAPTION
INPUT SELECT        : TUNER
VIDEO ADJUST
SET UP FM
SPEAKER             : ON
SELECT:▲ ▼ KEY
SET   :▶ KEY
END   :ACTION KEY
```

1) Press ▲▼ to select.
2) Press ▶ to display.

d **Select FM ANTENNA.**


```
       SET UP FM
FM ANTENNA        : INT
FM TRANSMITTER    : ON
SET UP FM TRANSMITTER
SPKR W/FM TRANS   : OFF


SELECT:▲ ▼ KEY
SET   :▶ KEY
END   :ACTION KEY
```

1) Press ▲▼ to select.
2) Press ▶ to select "INT (INTERNAL)" or "EXT (EXTERNAL)" whichever sounds the best.

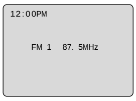
- **For cable TV users → "INT"**
- **For antenna users → "EXT"**

e **End setup.**
Press ACTION three times to exit.

Using FM Radio

A **Display FM radio mode.**
Press FM/TV on the remote or TIMER/FM twice on the unit.

B **Select the FM number.**


```
12:00PM

  FM 1   87. 5MHz
```

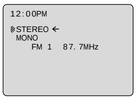
Press a NUMBERED key (1~9) to select a preset station (see steps **2** and **3** on the previous section.)

To cancel, press FM/TV on the remote or TIMER/FM twice on the unit.

Notes

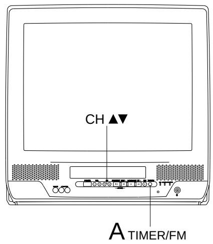
Once stations are set, the selected station and current time are displayed when FM Radio mode is entered. To remove time, press DISPLAY.
If DISPLAY is pressed, the unit status screen appears.

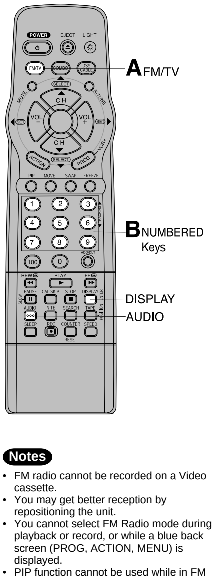
To select Audio Mode for FM Radio


```
12:00PM
((•STEREO ←
  MONO
   FM 1   87. 7MHz
```

Select "STEREO" or "MONO."

Press AUDIO repeatedly in FM Radio mode.



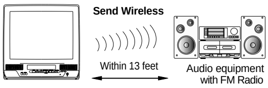


Notes

- FM radio cannot be recorded on a Video cassette.
- You may get better reception by repositioning the unit.
- You cannot select FM Radio mode during playback or record, or while a blue back screen (PROG, ACTION, MENU) is displayed.
- PIP function cannot be used while in FM mode.

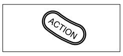
FM Transmitter

FM Transmitter is ...
a feature whereby this unit's sound signal can be heard on your FM Radio. First, tune your radio to a frequency (93 ~ 97, 99 ~ 103 MHz) that is not being broadcast on by a radio station. Then, set this unit to the same carrier frequency (see below.) Now, fine-tune this unit so the sound comes in clearly.

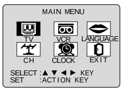

Send Wireless
Within 13 feet
Audio equipment with FM Radio

Carrier Frequency : 93 ~ 97, 99 ~ 103 MHz

FM Transmitter Carrier Frequency Setup

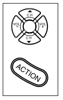
1 

Display MAIN MENU.
Press ACTION*.

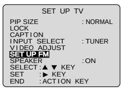
2 
MAIN MENU
TV
VCR
LANGUAGE
CH
CLOCK
EXIT

```
SELECT :▲ ▼ ◀ ▶ KEY
SET    :ACTION KEY
```

Display SET UP TV screen.

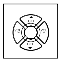

CH
VOL
VOL
CH
ACTION

1) Press ▲▼◀▶ to select "TV."
2) Press ACTION to display.

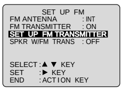
3 

```
        SET UP TV
PIP SIZE            : NORMAL
LOCK
CAPTION
INPUT SELECT        : TUNER
VIDEO ADJUST
SET UP FM
SPEAKER             :ON
SELECT :▲ ▼ KEY
SET    :▶ KEY
END    :ACTION KEY
```

Select SET UP FM.

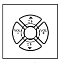

CH
VOL
VOL
CH

1) Press ▲▼ to select.
2) Press ▶ to display.

4 

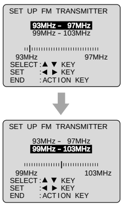
```
        SET UP FM
FM ANTENNA          : INT
FM TRANSMITTER      : ON
SET UP FM TRANSMITTER
SPKR W/FM TRANS     : OFF

SELECT :▲ ▼ KEY
SET    :▶ KEY
END    :ACTION KEY
```

Select SET UP FM TRANSMITTER.


CH
VOL
VOL
CH

1) Press ▲▼ to select.
2) Press ▶ to display.

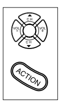
- When step **4** is done, FM TRANSMITTER is automatically set to "ON."

5 

```
SET UP FM TRANSMITTER

    93MHz –  97MHz
    99MHz – 103MHz

 93MHz              97MHz
SELECT :▲ ▼ KEY
SET    :◀ ▶ KEY
END    :ACTION KEY
```

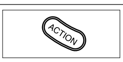
```
SET UP FM TRANSMITTER

    93MHz –  97MHz
    99MHz – 103MHz

 99MHz             103MHz
SELECT :▲ ▼ KEY
SET    :◀ ▶ KEY
END    :ACTION KEY
```

Set the Carrier Frequency.


CH
VOL
VOL
CH
ACTION

1) Press ▲▼ to select the desired frequency range. (93-97 or 99-103MHz)
2) Press ◀▶ to select the Carrier Frequency.
3) Press ACTION to set. (Then screen in step **4** is redisplayed.)

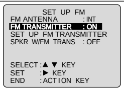
To Make Corrections,
select frequency with CH ▲▼◀▶, then repeat step **5**.

6 

End setup
Press ACTION four times.

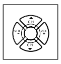
FM Transmitter ON/OFF

1 **Do "FM Transmitter Carrier Frequency Setup" steps 1~3. (See left.)**

2 

```
        SET UP FM
FM ANTENNA          : INT
FM TRANSMITTER      : ON
SET UP FM TRANSMITTER
SPKR W/FM TRANS     : OFF

SELECT :▲ ▼ KEY
SET    :▶ KEY
END    :ACTION KEY
```

Select SET UP FM TRANSMITTER.


CH
VOL
VOL
CH

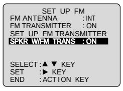
1) Press ▲▼ to select.
2) Press ▶ to set "ON" or "OFF."

3

End setup
Press ACTION three times.

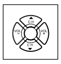
Speaker with FM Transmitter ON/OFF

1 **Do "FM Transmitter Carrier Frequency Setup" steps 1~3. (See left.)**

2 

```
        SET UP FM
FM ANTENNA          : INT
FM TRANSMITTER      : ON
SET UP FM TRANSMITTER
SPKR W/FM TRANS     : ON

SELECT :▲ ▼ KEY
SET    :▶ KEY
END    :ACTION KEY
```

Select Speaker with Transmitter.


CH
VOL
VOL
CH

1) Press ▲▼ to select.
2) Press ▶ to set "ON" or "OFF."

If you select...
- ■ **"ON"** ➔ Internal Speaker ON with Transmitter
- ■ **"OFF"** ➔ Internal Speaker MUTE with Transmitter

Notes
- This operation has effect only when "FM TRANSMITTER : ON" (see above.)
- If "SPKR W/FM TRANS : OFF", the MUTE and VOLUME key will not function.

3

End setup
Press ACTION three times.

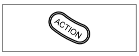
Notes
- The Carrier Frequency shown by the selector bar is a guide only. Please listen to the sound and adjust accordingly.
- The unit will transmit sound when unit power is on and "FM TRANSMITTER : ON" is selected.
- When unit power is turned off, "FM TRANSMITTER" returns to "OFF" setting.
- Please place your FM Radio within 13 feet of the unit.
- Interference occurs when you select CATV channels 95, 96, or 97, while FM Transmitter is operating.
- FM Transmitter will not work in FM Radio Mode.
- Depending on the positioning or type of FM Receiver, the sound signal may become noisy. In this case, change the FM Receiver from Stereo to Monaural.

V-Chip Control Feature

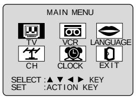
V-Chip Control Feature is...
This unit has a built-in V-Chip Control which allows you to block unwanted TV usage based on US MOVIES and US TV PROGRAMS ratings.

Enter Secret Code

A 4-digit code must be entered to view a blocked program or change rating settings.

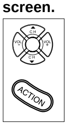
1 

Display MAIN MENU.
Press ACTION*.

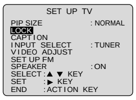
2 
MAIN MENU
TV
VCR
LANGUAGE
CH
CLOCK
EXIT

```
SELECT :▲ ▼ ◀ ▶ KEY
SET    :ACTION KEY
```

Display SET UP TV screen.

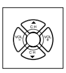

CH
VOL
VOL
CH
ACTION

1) Press ▲▼◀▶ to select "TV."
2) Press ACTION to display.

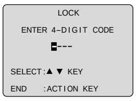
3 

```
        SET UP TV
PIP SIZE            : NORMAL
LOCK
CAPTION
INPUT SELECT        : TUNER
VIDEO ADJUST
SET UP FM
SPEAKER             :ON
SELECT :▲ ▼ KEY
SET    :▶ KEY
END    :ACTION KEY
```

Select Lock.

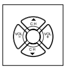

CH
VOL
VOL
CH

1) Press ▲▼ to select.
2) Press ▶ to display.

4 

```
          LOCK

  ENTER 4–DIGIT CODE
          ----

SELECT :▲ ▼ KEY

END    :ACTION KEY
```

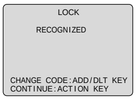
Enter your secret code.


CH
VOL
VOL
CH

1) Press ▲▼ to select a number.
2) Press ▶ (or ◀) to set.

- Repeat step **4** until all 4-digits are entered.
- Take care that you are not observed entering the secret code.

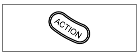
To Make Corrections
Press ◀▶ to move the cursor and ▲▼ to make the correction.

5 

```
          LOCK

      RECOGNIZED



CHANGE CODE:ADD/DLT KEY
CONTINUE:ACTION KEY
```

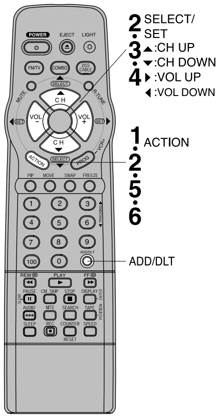
Save 4-DIGIT CODE.

Press ACTION.

6 

Display LOCK menu for rating screen.
Press ACTION and go to
US MOVIES Ratings or
US TV PROGRAMS Ratings
OR
to exit, press ACTION
four times.

Process of V-Chip Control Feature
Enter Code ⇨ Setup ⇨ Blocking


POWER
EJECT
LIGHT
FM/TV
COMBO
DSS CABLE
SELECT
MUTE
R-TUNE
SET
CH
VOL –
VOL +
SET
CH
ACTION
SELECT
PROG
– VCR+
PIP
MOVE
SWAP
FREEZE
1
2
3
4
5
6
7
8
9
100
0
ADD/DLT
TRACKING
REW
PLAY
FF
SLOW
PAUSE
CM SKIP
STOP
DISPLAY
ENTER
AUDIO
NITE
SEARCH
TAPE
POSITION
SLEEP
REC
COUNTER
SPEED
RESET

2 SELECT/ SET
3 ▲:CH UP
▼:CH DOWN
4 ▶:VOL UP
◀:VOL DOWN
1 ACTION
2
5
6
ADD/DLT

Changing your secret code
- You will need your current code.

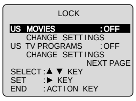
Do steps **1** ~ **4**. In step **5**, press ADD/DLT to clear current code. Repeat steps **4** and **5** to enter new code.

Notes
- DO NOT forget your secret code.
- Once ratings are set, restricted tapes or programs cannot be accessed unless the secret code is entered.

V-Chip Control Feature (continued)

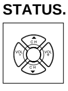
Setup US MOVIES Ratings

If LOCK menu is not displayed, do "Enter Secret Code" steps.

1 

```
          LOCK

US MOVIES              :OFF
    CHANGE SETTINGS
US TV PROGRAMS         :OFF
    CHANGE SETTINGS
                  NEXT PAGE
SELECT :▲ ▼ KEY
SET    :▶ KEY
END    :ACTION KEY
```

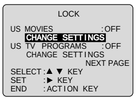
Select US MOVIES STATUS.


CH
VOL
VOL
CH

1) Press ▲▼ to select.
2) Press ▶ to set "ON" or "OFF."

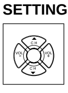
If you select US MOVIES STATUS:
- ■ **"ON" ➔ V-Chip Control is activated.**
- ■ **"OFF" ➔ V-Chip Control is deactivated.**

Notes
- "NEXT PAGE" is setup to CANADIAN V-Chip setting mode. "NEXT PAGE" cannot be used in the U.S.

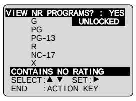
2 

```
          LOCK

US MOVIES              :OFF
    CHANGE SETTINGS
US TV PROGRAMS         :OFF
    CHANGE SETTINGS
                  NEXT PAGE
SELECT :▲ ▼ KEY
SET    :▶ KEY
END    :ACTION KEY
```

Select CHANGE SETTINGS.

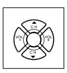

CH
VOL
VOL
CH

1) Press ▲▼ to select.
2) Press ▶ to display.

3 

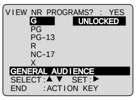
```
VIEW NR PROGRAMS? : YES
      G           UNLOCKED
      PG
      PG–13
      R
      NC–17
      X
CONTAINS NO RATING
SELECT :▲ ▼   SET :▶
END    :ACTION KEY
```

Select VIEW NR PROGRAMS?


CH
VOL
VOL
CH

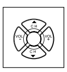
1) Press ▲▼ to select.
2) Press ▶ to set "YES" or "NO."

NR (Not Rated) PROGRAMS
Some movies, such as old movies or foreign movies usually have no ratings.

4 

```
VIEW NR PROGRAMS? : YES
      G           UNLOCKED
      PG
      PG–13
      R
      NC–17
      X
GENERAL AUDIENCE
SELECT :▲ ▼   SET :▶
END    :ACTION KEY
```

Select ratings to be blocked. (See right.)

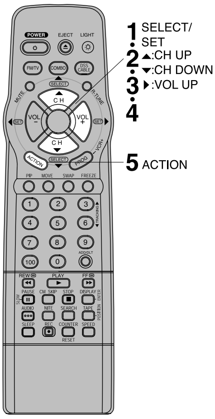

CH
VOL
VOL
CH

1) Press ▲▼ to select.
2) Press ▶ to set.

5

Redisplay LOCK menu to continue setup.
Press ACTION and go to
US TV PROGRAMS Ratings
OR
to exit, press ACTION
four times.

Process of V-Chip Control Feature
Enter Code ⇨ **Setup** ⇨ Blocking

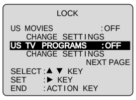

POWER
EJECT
LIGHT
FM/TV
COMBO
DSS CABLE
SELECT
MUTE
R-TUNE
SET
CH
VOL –
VOL +
SET
CH
ACTION
SELECT
PROG
– VCR+
PIP
MOVE
SWAP
FREEZE
1
2
3
4
5
6
7
8
9
100
0
ADD/DLT
TRACKING
REW
PLAY
FF
SLOW
PAUSE
CM SKIP
STOP
DISPLAY
ENTER
AUDIO
NITE
SEARCH
TAPE
POSITION
SLEEP
REC
COUNTER
SPEED
RESET

1 SELECT/ SET
2 ▲:CH UP
▼:CH DOWN
3 ▶:VOL UP
4
5 ACTION

US MOVIES RATINGS	
G	**GENERAL AUDIENCE:** All ages admitted.
PG	**PARENTAL GUIDANCE:** Some material may not be suitable for children.
PG-13	**PARENTS CAUTIONED:** Some material may be inappropriate for children under 13.
R	**RESTRICTED:** Children under 17 must be accompanied by a parent or adult.
NC-17	**OVER AGE 17 ONLY:** No one 17 and under admitted.
X	**ADULTS ONLY:**

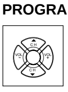
Setup US TV PROGRAMS Ratings

If LOCK menu is not displayed, do "Enter Secret Code" steps.

1 

```
          LOCK

US MOVIES              :OFF
    CHANGE SETTINGS
US TV PROGRAMS         :OFF
    CHANGE SETTINGS
                  NEXT PAGE
SELECT :▲ ▼ KEY
SET    :▶ KEY
END    :ACTION KEY
```

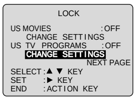
Select US TV PROGRAMS STATUS.


CH
VOL
VOL
CH

1) Press ▲▼* to select.
2) Press ▶ to set "ON" or "OFF."

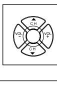
If you select US TV PROGRAMS STATUS:
- ■ **"ON" ➔ V-Chip Control is activated.**
- ■ **"OFF" ➔ V-Chip Control is deactivated.**

Notes
- "NEXT PAGE" is setup to CANADIAN V-Chip setting mode. "NEXT PAGE" cannot be used in the U.S.

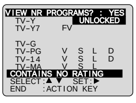
2 

```
          LOCK

US MOVIES              :OFF
    CHANGE SETTINGS
US TV PROGRAMS         :OFF
    CHANGE SETTINGS
                  NEXT PAGE
SELECT :▲ ▼ KEY
SET    :▶ KEY
END    :ACTION KEY
```

Select CHANGE SETTINGS.

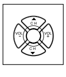

CH
VOL
VOL
CH

1) Press ▲▼ to select.
2) Press ▶ to display.

3 

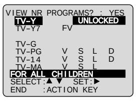
```
VIEW NR PROGRAMS? : YES
  TV–Y            UNLOCKED
  TV–Y7      FV

  TV–G
  TV–PG      V   S   L   D
  TV–14      V   S   L   D
  TV–MA      V   S   L
CONTAINS NO RATING
SELECT :▲ ▼   SET :▶
END    :ACTION KEY
```

Select VIEW NR PROGRAMS?


CH
VOL
VOL
CH

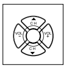
1) Press ▲▼ to select.
2) Press ▶ to set "YES" or "NO."

NR (Not Rated) PROGRAMS
Some TV shows, such as news, sports, weather, bulletins, emergency information usually have no ratings.

4 

```
VIEW NR PROGRAMS? : YES
  TV–Y            UNLOCKED
  TV–Y7      FV

  TV–G
  TV–PG      V   S   L   D
  TV–14      V   S   L   D
  TV–MA      V   S   L
FOR ALL CHILDREN
SELECT :▲ ▼   SET :▶
END    :ACTION KEY
```

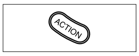
Select ratings to be blocked.


CH
VOL
VOL
CH

1) Repeatedly Press ▲▼ to select.
2) Press ▶ to set.

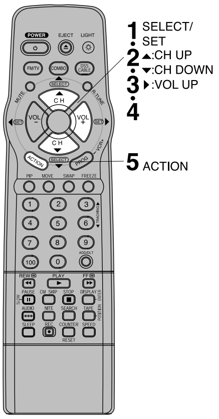
- Ratings which are highlighted in Green will be blocked, when not highlighted (white letters), these will not be blocked.

Note
You may select from standard TV ratings (chart 1), or customize to a specific content rating (chart 2.)

5 

Exit this mode.
Press ACTION four times.

Process of V-Chip Control Feature
Enter Code ⇨ **Setup** ⇨ Blocking


POWER
EJECT
LIGHT
FM/TV
COMBO
DSS CABLE
SELECT
MUTE
R-TUNE
SET
CH
VOL –
VOL +
SET
CH
ACTION
SELECT
PROG
– VCR+
PIP
MOVE
SWAP
FREEZE
1
2
3
4
5
6
7
8
9
100
0
ADD/DLT
TRACKING
REW
PLAY
FF
SLOW
PAUSE
CM SKIP
STOP
DISPLAY
ENTER
AUDIO
NITE
SEARCH
TAPE
POSITION
SLEEP
REC
COUNTER
SPEED
RESET

1 SELECT/ SET
2 ▲:CH UP
▼:CH DOWN
3 ▶:VOL UP
4
5 ACTION

V-Chip Control Feature (continued)

US TV PROGRAMS RATINGS: Chart 1

TV-Y	FOR ALL CHILDREN: Content specifically geared to young viewers ages 2-6.
TV-Y7	FOR AGE 7 AND OLDER: May contain mild physical or comedic violence which may frighten children under 7.
TV-G	GENERAL AUDIENCE: Contains little or no violence, strong language, or sexual dialogue or situations.
TV-PG	PARENTAL GUIDANCE: May contain infrequent coarse language, limited violence, some suggestive sexual dialogue and situations.
TV-14	PARENTS CAUTIONED: May contain sophisticated themes, sexual situations, strong language, and more intense violence.
TV-MA	MATURE AUDIENCE: May contain mature themes, profane language, graphic violence, and sexual situations.

US TV PROGRAMS RATINGS: Chart 2

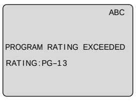
FV	Fantasy Violence
V	Violence
S	Sexual Situations
L	Adult Language
D	Sexually Suggestive Dialogue

Process of V-Chip Control Feature

Enter Code ⇨ Setup ⇨ Blocking

Blocking Message

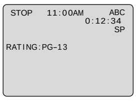
<When V-Chip Control is activated>


ABC

PROGRAM RATING EXCEEDED

RATING:PG–13

- If V-Chip Control is activated, and a program or movie exceeds the ratings you have set, a message will appear on a black background and sound is muted.


STOP 11:00AM ABC
0:12:34
SP

RATING:PG–13

- If DISPLAY is pressed, even when V-Chip control is deactivated, rating is displayed on-screen.

To Continue Viewing a Blocked Program
After entering your 4-digit secret code, go to step **1** on previous section and select "OFF" to deactivate V-Chip Control.

- The US MOVIES and US TV PROGRAMS ratings you set will be retained.

Note

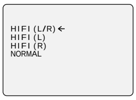
- PIP function cannot be used when V-Chip control is active.
- When the PIP picture is blocked due to the V-Chip feature, the PIP screen turns black while the Main Picture continues to be displayed.

Audio Features

Select Audio Mode for Playback

Choose the type of sound track for playback.

1 **Playback the tape.**
See the "Playback a Tape" section.

2 
HIFI (L/R) ←
HIFI (L)
HIFI (R)
NORMAL

- This screen appears when you press AUDIO during playback.

Select desired mode.

Press AUDIO repeatedly (each press within 5 seconds.)

- Please select "HIFI (L/R)", "HIFI (L)" or "HIFI (R)" to listen to stereo recordings in stereo sound. Select "NORMAL" for monaural sound.

With the proper audio mode setting, your unit can:

- record and playback MTS stereo broadcast (main language) in stereo Hi-Fi. Stereo sound is recorded on the left and right audio tracks and on the video portion of a tape.
- record and playback a monaural broadcast (main language) or SAP (Secondary Audio Program, usually in a second language) on the Hi-Fi tracks for better quality monaural sound.
- playback non-Hi-Fi tapes in monaural.

Select Audio Mode for Recording

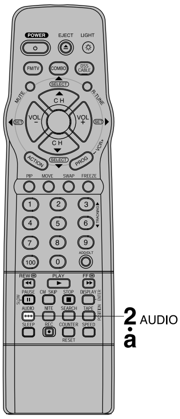
Choose the type of broadcast to be recorded.

a

Select Audio Mode for recording, "Select Audio Mode for TV Viewing" steps.
Press AUDIO.

- Recording will always be made in the audio mode selected in the "Select Audio Mode for TV Viewing" section.

b **Do a recording.**
See the "Record On a Tape" section.



Notes

- When purchasing or renting prerecorded tapes, remember that only those recorded in Hi-Fi stereo will playback with true stereo sound. Standard stereo tapes will playback with monaural sound.
- To listen to the superior sound of Hi-Fi stereo playback, the unit AUDIO (L/R) jacks must be connected to a stereo amp and speakers.
- There may be a difference in audio level between Hi-Fi and normal audio playback.

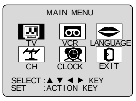
Audio Features (continued)

Speaker ON/OFF System

Allows you to turn off the speaker of the unit when it is connected to external audio equipment.

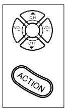
1

Display MAIN MENU.
Press ACTION*.

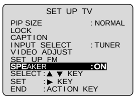
2 

SELECT :▲ ▼ ◀ ▶ KEY
SET :ACTION KEY

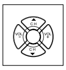
Display SET UP TV screen.



1) Press ▲▼◀▶ to select "TV."
2) Press ACTION to display.

3 
SET UP TV
PIP SIZE : NORMAL
LOCK
CAPTION
INPUT SELECT : TUNER
VIDEO ADJUST
SET UP FM
SPEAKER :ON
SELECT :▲ ▼ KEY
SET : ▶ KEY
END : ACTION KEY

Select SPEAKER.

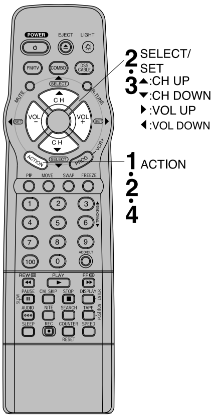


1) Press ▲▼ to select.
2) Press ▶ to set "ON" or "OFF."

- In SPEAKER OFF condition, the MUTE button and VOL + – do not function.

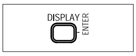
4

End setup.
Press ACTION twice.



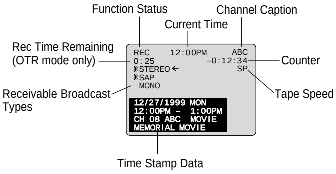
On-Screen Display (OSD)

VCR Status & Clock Display



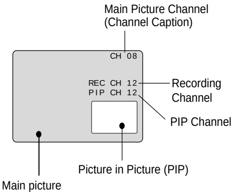
To display or remove the overlay.
Press DISPLAY.

Normal screen



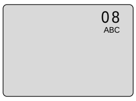
REC 12:00PM ABC
0:25 –0:12:34
STEREO ← SP
SAP
MONO
12/27/1999 MON
12:00PM – 1:00PM
CH 08 ABC MOVIE
MEMORIAL MOVIE

Picture in Picture (PIP) screen



Channel & Function Display

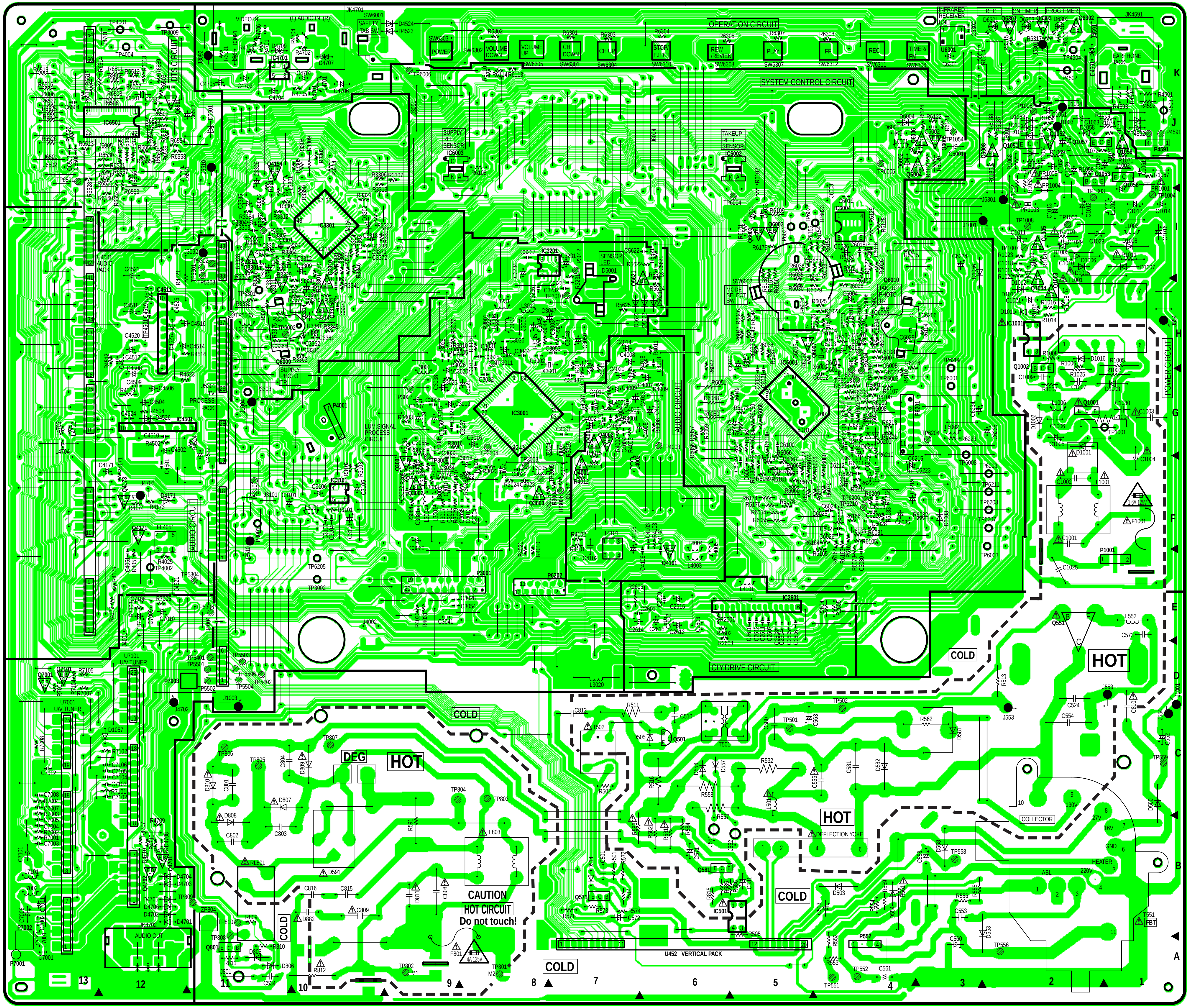
When a function button is pressed (PLAY, FF, etc.) or you change channels, the unit mode or channel number will be displayed. (Some station names may also appear if Channel Caption is set.)


08
ABC

Blue Screen Display

Whenever a blank section of a tape comes up in Play mode, or when the selected channel has no broadcast signal with the **"**Weak Signal Display ON/OFF**"** set to **"**OFF,**"**
the TV screen will turn solid blue.

TV/VCR MAIN C.B.A. VEPS3083D


OPERATION CIRCUIT
POWER
VOLUME DOWN
VOLUME UP
CH DOWN
CH UP
STOP/EJECT
REW /REVIEW
PLAY
FF
REC
TIMER/PM
SYSTEM CONTROL CIRCUIT
INFRARED RECEIVER UNIT
REC
ON TIMER
PROG TIMER
EARPHONE JACK
SAFETY TAB SW
VIDEO IN
(L) AUDIO IN (R)
SUPPLY REEL SENSOR
TAKEUP REEL SENSOR
SENSOR LED
MODE SELECT SW
TAKEUP PHOTO TR
SUPPLY PHOTO TR
IC3301
IC3001
IC6001
IC6501
IC4511
IC2601
U4001 AUDIO PACK
U5301 TV PROCESS PACK
LUM.SIGNAL PROCESS CIRCUIT
AUDIO CIRCUIT
DTS CIRCUIT
POWER CIRCUIT
CLY.DRIVE CIRCUIT
U7101 U/V TUNER
U7001 U/V TUNER
AUDIO OUT
COLD
HOT
DEG
CAUTION
HOT CIRCUIT
Do not touch!
4A 125V
DEFLECTION YOKE
COLLECTOR
HEATER
ABL
220V
130V
27V
16V
GND
FBT
U452 VERTICAL PACK
1
2
3
4
5
6
7
8
9
10
11
12
13
A
B
C
D
E
F
G
H
I
J
K

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN ⚠ HAVE
SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,
USE ONLY THE SPECIFIED PARTS.

4A 125V
CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE 4A 125V FUSE.
ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES
D' INCENDIE N' UTILISERQUE DES FUSIBLE DE MÊME
TYPE 4A 125V

1.6A 125V
CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE 1.6A 125V FUSE.
ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES
D'T INCENDIE N'I UTILISERQUE DES FUSIBLE DE MÊME
TYPE 1.6A 125V

NOTE:
CIRCUIT BOARD LAYOUT INCLUDES COMPONENTS WHICH ARE NOT USED.
PLEASE REFER TO THE SCHEMATIC DIAGRAM AND PARTS LIST FOR PROPER PARTS CONTENT.

HOT CIRCUIT. BE CAREFUL AND USE AN ISOLATION TRANSFORMER WHEN SERVICING.

AUDIO C.B.A. VEPS4034B

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

NOTE:
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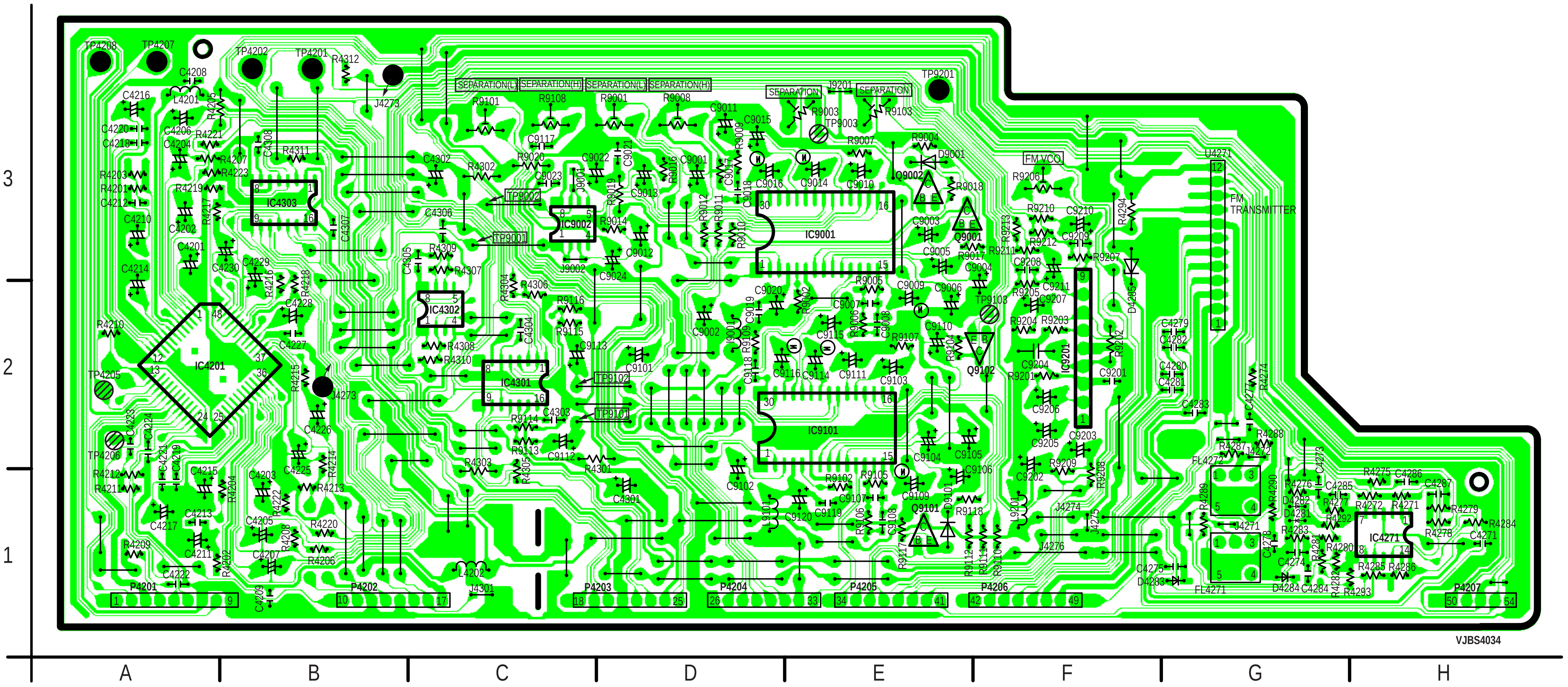
PLEASE REFER TO THE SCHEMATIC DIAGRAM AND PARTS LIST FOR PROPER PARTS CONTENT.



3
2
1
A
B
C
D
E
F
G
H
VJBS4034
IC4201
IC4303
IC4302
IC4301
IC9002
IC9001
IC9101
IC9201
IC4271
U4271
FM TRANSMITTER
FM VCO
SEPARATION(L)
SEPARATION(H)
SEPARATION
Q9001
Q9002
Q9101
Q9102
TP4201
TP4202
TP4205
TP4206
TP4207
TP4208
TP9001
TP9002
TP9003
TP9101
TP9102
TP9103
TP9201
J4273
J4301
J9001
J9002
J9201
J4271
J4272
J4274
J4275
J4276
L4201
L4202
L9101
L9201
FL4271
FL4272
D9001
D9101
D4282
D4283
D4284
D4285
P4201
P4202
P4203
P4204
P4205
P4206
P4207

TV PROCESS C.B.A. VEPS3084C

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

NOTE:
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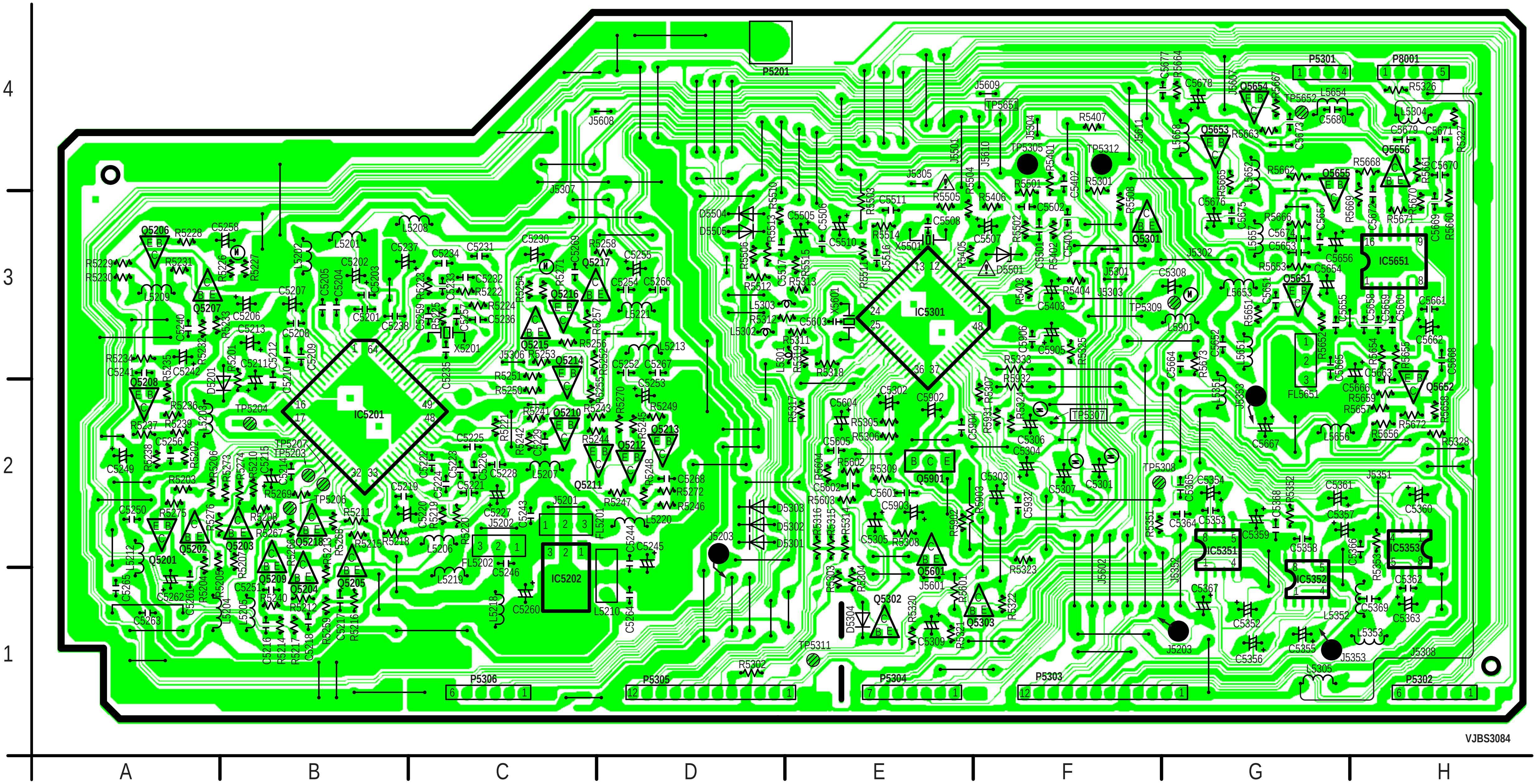
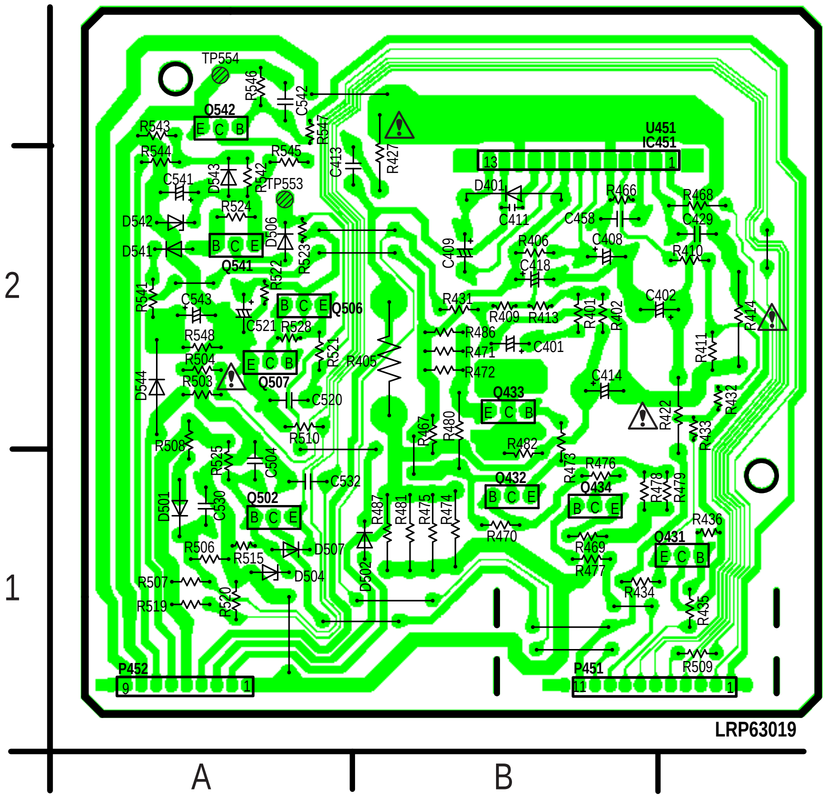
PLEASE REFER TO THE SCHEMATIC DIAGRAM AND PARTS LIST FOR PROPER PARTS CONTENT.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN ⚠ HAVE
SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,
USE ONLY THE SPECIFIED PARTS.


4
3
2
1
A
B
C
D
E
F
G
H
P5201
P5301
P8001
P5306
P5305
P5304
P5303
P5302
IC5201
IC5202
IC5301
IC5651
IC5351
IC5352
IC5353
FL5651
FL5201
FL5202
X5201
X5501
X5601
Q5201
Q5202
Q5203
Q5204
Q5205
Q5206
Q5207
Q5208
Q5209
Q5210
Q5211
Q5212
Q5213
Q5214
Q5215
Q5216
Q5217
Q5218
Q5301
Q5302
Q5303
Q5601
Q5651
Q5652
Q5653
Q5654
Q5655
Q5656
Q5901
TP5204
TP5206
TP5207
TP5203
TP5305
TP5312
TP5307
TP5308
TP5309
TP5311
TP5651
TP5652
J5201
J5202
J5203
J5301
J5302
J5303
J5305
J5307
J5308
J5351
J5353
J5601
J5608
J5609
D5201
D5301
D5302
D5303
D5304
D5501
D5504
D5505
VJBS3084

VERTICAL C.B.A. LRP63019B

NOTE:
CIRCUIT BOARD LAYOUT INCLUDES COMPONENTS WHICH ARE NOT USED.
PLEASE REFER TO THE SCHEMATIC DIAGRAM AND PARTS LIST FOR PROPER PARTS CONTENT.

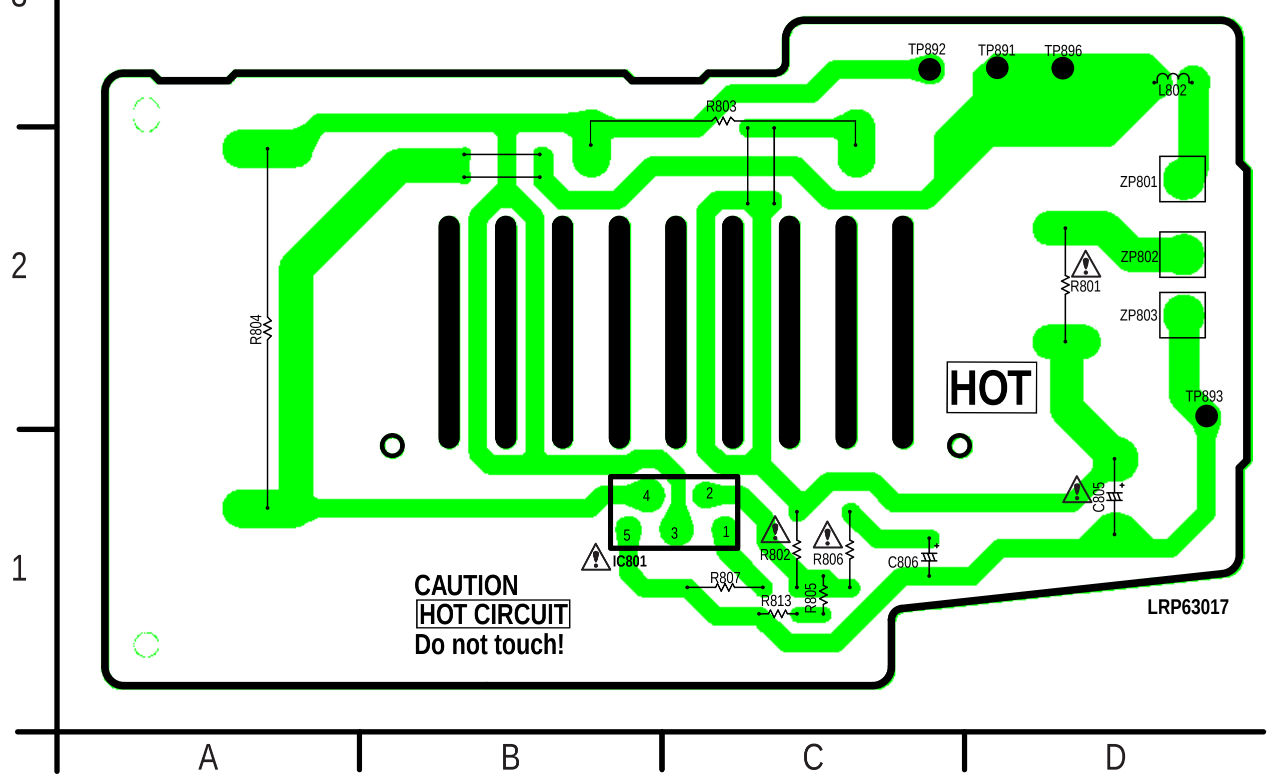

TP554
R546
C542
R547
Q542
R543
R544
R545
C413
R427
U451
IC451
13
1
C541
D543
R542
TP553
D401
C411
R466
R468
C429
D542
R524
D506
C458
R406
C408
C409
D541
Q541
R523
R522
C418
R410
R541
C543
Q506
R431
R409
R413
C402
R548
C521
R528
R486
C401
R401
R402
R414
R504
R521
R405
R471
R411
D544
R503
Q507
R472
C414
C520
Q433
R422
R432
R510
R467
R480
R433
R505
R482
R525
C504
C532
Q432
R473
R476
Q434
R478
R479
D501
C530
Q502
R487
R481
R475
R474
R470
R436
R506
D507
R469
Q431
R515
R477
R507
D504
D502
R434
R519
R520
R435
P452
9
P451
11
1
R509
LRP63019
A
B
1
2

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN ⚠ HAVE
SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,
USE ONLY THE SPECIFIED PARTS.

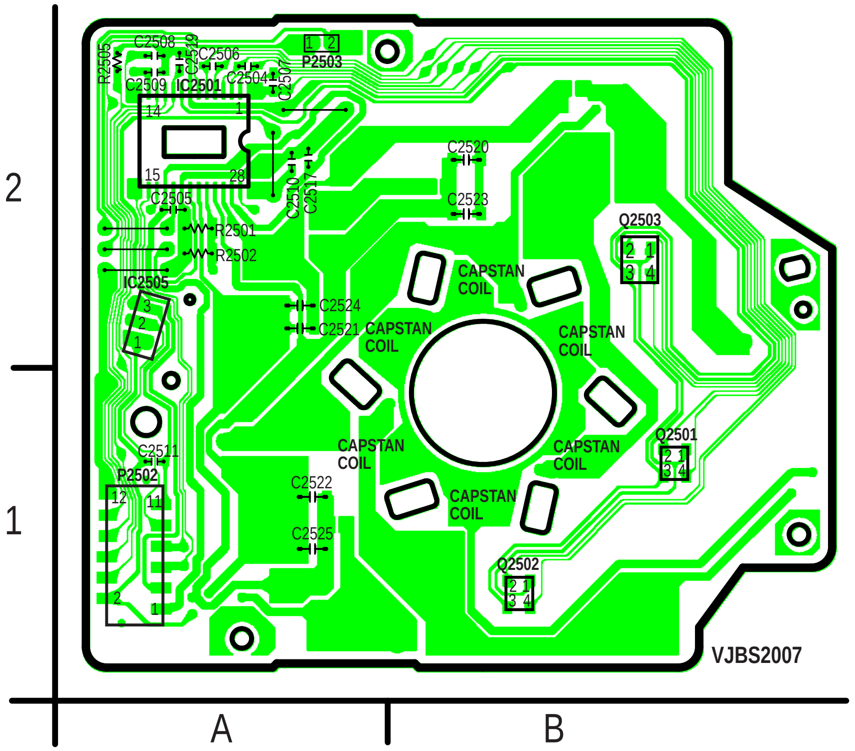
TV POWER C.B.A. LRP63017B

NOTE:
CIRCUIT BOARD LAYOUT INCLUDES COMPONENTS WHICH ARE NOT USED.
PLEASE REFER TO THE SCHEMATIC DIAGRAM AND PARTS LIST FOR PROPER PARTS CONTENT.

HOT CIRCUIT. BE CAREFUL AND USE AN ISOLATION TRANSFORMER WHEN SERVICING.


TP892
TP891
TP896
L802
R803
ZP801
ZP802
R801
ZP803
R804
HOT
TP893
C805
4
2
5
3
1
IC801
R802
R806
C806
R807
R813
R805
CAUTION
HOT CIRCUIT
Do not touch!
LRP63017
A
B
C
D
1
2
3

CAPSTAN STATOR C.B.A. VEMS0331


C2508
R2505
C2519
C2506
P2503
C2504
C2507
C2509
IC2501
14
1
15
28
C2520
C2510
C2517
C2505
C2523
R2501
R2502
Q2503
CAPSTAN COIL
IC2505
C2524
C2521
CAPSTAN COIL
CAPSTAN COIL
C2511
CAPSTAN COIL
CAPSTAN COIL
Q2501
P2502
12
11
C2522
CAPSTAN COIL
C2525
Q2502
2
1
VJBS2007
A
B
1
2

NOTE:
WHEN INSTALLING THE IC2501(AN3845SC) OR CAPSTAN STATOR C.B.A., BE SURE TO APPLY SILICON GREASE(VFK1301). REFER TO "CAPSTAN STATOR C.B.A." OF MACHANISM SECTION IN DISASSEMBLY/ASSEMBLY PROCEDURES.

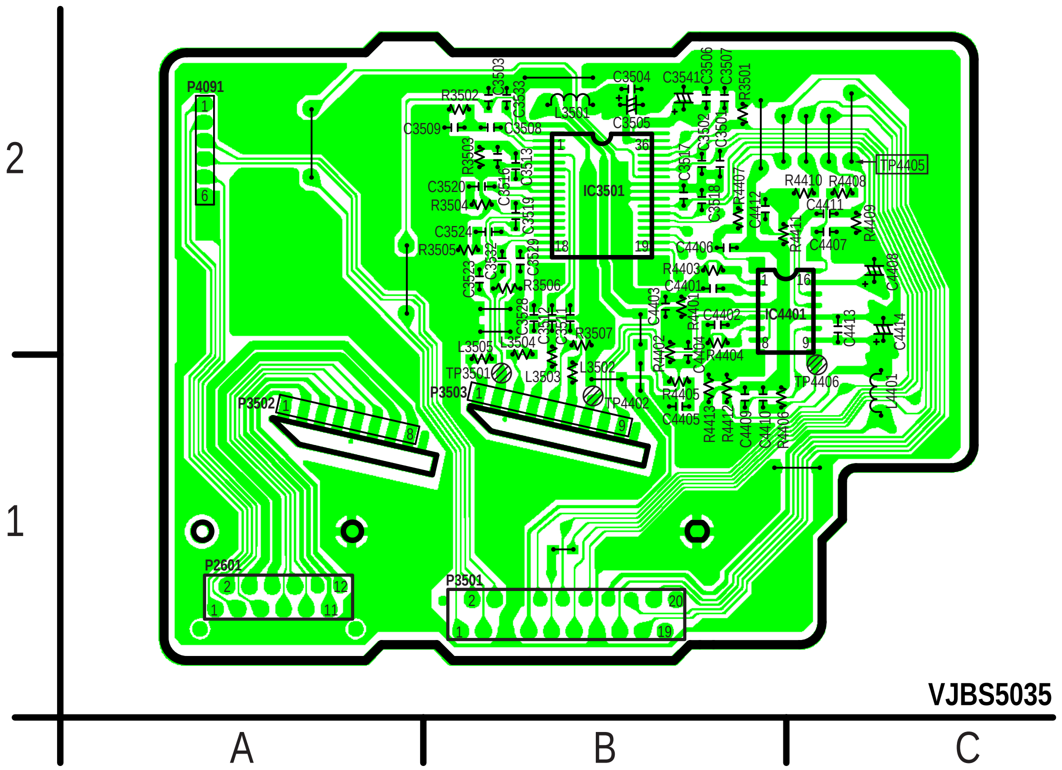
NOTE:
CIRCUIT BOARD LAYOUT INCLUDES COMPONENTS WHICH ARE NOT USED.
PLEASE REFER TO THE SCHEMATIC DIAGRAM AND PARTS LIST FOR PROPER PARTS CONTENT.

NOTE:
THE FOLLOWING PARTS ON THE CAPSTAN STATOR C.B.A. ARE NOT SUPPLIED SEPARATELY.
PLEASE ORDER AND REPLACE WITH THE CIRCUIT BOARD ASSEMBLY INSTEAD OF INDIVIDUAL PARTS.
(Q2501, Q2502, Q2503, CAPSTAN COIL)

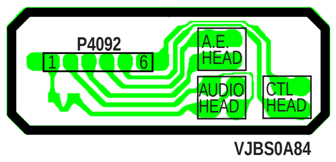
NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

Hi-Fi AUDIO/VIDEO HEAD AMP C.B.A. VEPS5035Z

NOTE:
CIRCUIT BOARD LAYOUT INCLUDES COMPONENTS WHICH ARE NOT USED.
PLEASE REFER TO THE SCHEMATIC DIAGRAM AND PARTS LIST FOR PROPER PARTS CONTENT.

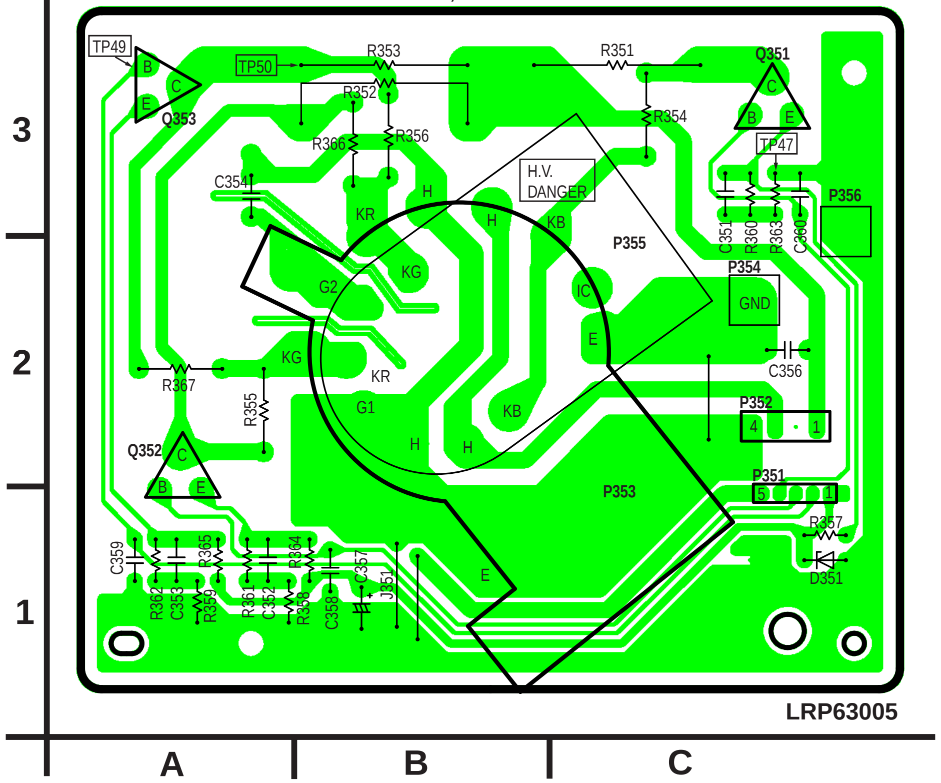

P4091
R3502
C3503
C3533
C3504
C3541
C3506
C3507
R3501
C3509
C3508
L3501
C3505
R3503
IC3501
C3520
R3504
C3524
R3505
C3523
R3506
C3517
C3502
C3501
C3518
R4407
C4406
R4403
C4401
C4403
R4401
C4402
R4402
R4404
R4405
C4405
R4413
R4412
C4409
C4410
R4406
TP4405
R4410
R4408
C4411
C4412
R4411
C4407
R4409
IC4401
C4408
C4413
C4414
L4401
TP4406
L3505
L3504
R3507
L3502
TP3501
L3503
P3503
TP4402
P3502
P2601
P3501
VJBS5035
2
1
A
B
C

AUDIO CONTROL HEAD P.C.B.


P4092
1
6
A.E. HEAD
AUDIO HEAD
CTL HEAD
VJBS0A84

CRT C.B.A. LRP63005E

CAUTION: WHEN SERVICING THIS C.B.A., AVOID TOUCHING HIGH VOLTAGE COMPONENTS.


TP49
B
C
E
Q353
TP50
R353
R352
R351
Q351
R354
R366
R356
TP47
C354
H.V. DANGER
P356
KR
H
KB
P355
KG
G2
IC
E
P354
GND
C351
R360
R363
C360
C356
R367
KG
KR
G1
KB
R355
P352
4
1
Q352
H
P351
5
1
P353
R357
D351
C359
R362
C353
R359
R365
R361
C352
R358
R364
C358
C357
J351
E
LRP63005
3
2
1
A
B
C

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

NOTE:
CIRCUIT BOARD LAYOUT INCLUDES COMPONENTS WHICH ARE NOT USED.
PLEASE REFER TO THE SCHEMATIC DIAGRAM AND PARTS LIST FOR PROPER PARTS CONTENT.

1. **Important safety notice**
   Components identified by the sign ⚠ have special characteristics important for safety. When replacing any of these components. Use only the specified parts.

2. Do not use the part number shown on this drawing for ordering.
   The correct part number is shown in the parts list, and may be slightly different or amended since this drawing was prepared.

3. Use only original replacement parts:
   To maintain original function and reliability of repaired units, use only original replacement parts which are listed with their part numbers in the parts list section of the service manual.

4. Parts different in shape or size may be used.
   However, only interchangeable parts will be supplied as service replacement parts.

5. Test point information
   ⦶ :Test point with a jumper wire across a hole in P.C.B.
   ▭→ :Test point with a component lead on the foil side.
   ▨ :Test point with no test pin.
   ● :Test point with a test pin.

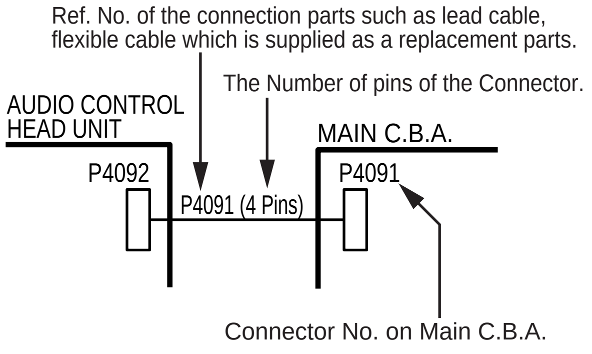
Schematic Diagram Notes

1. Indication for Zener Voltage of Zener Diodes
   The Zener Voltage of Zener Diodes are indicated as such on Schematic Diagrams.

   Example:
   (6.2V)......Zener Voltage

2. How to identify Connectors
   Each connector is labeled with a Connector No. and Pin No. Indicating what it is connected to, in other words, its counter part.
   Use the interconnection schematic diagram to find the connection between associated connectors.

   Example:
   The connections between C.B.A.s are shown below.

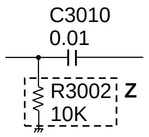

Ref. No. of the connection parts such as lead cable, flexible cable which is supplied as a replacement parts.

The Number of pins of the Connector.

Connector No. on Main C.B.A.

3. Parts enclosed in dashed lines marked "Z" are not used in any models included in this service manual.

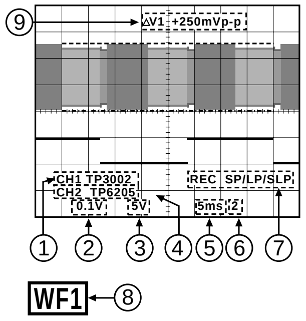
   Example:



4. The part number shown on this drawing is only main part number, except for safety parts. Be sure to make your orders of replacement parts according to the parts list.

Signal Waveform Note

How to read Signal Waveform



① Connecting Point
② Volts/Div
③ Volts/Div
④ Connecting Point
⑤ Time/Div
⑥ Trigger Channel of the scope (1:CH1,2:CH2)
⑦ Operation Mode of VCR
⑧ Waveform Point on Schematic
⑨ ΔV1:Peak to Peak

Voltage Chart Note

Voltage Measurement
a. Color bar signal in SP mode.
b. ---:Unmeasurable or not necessary to measure.

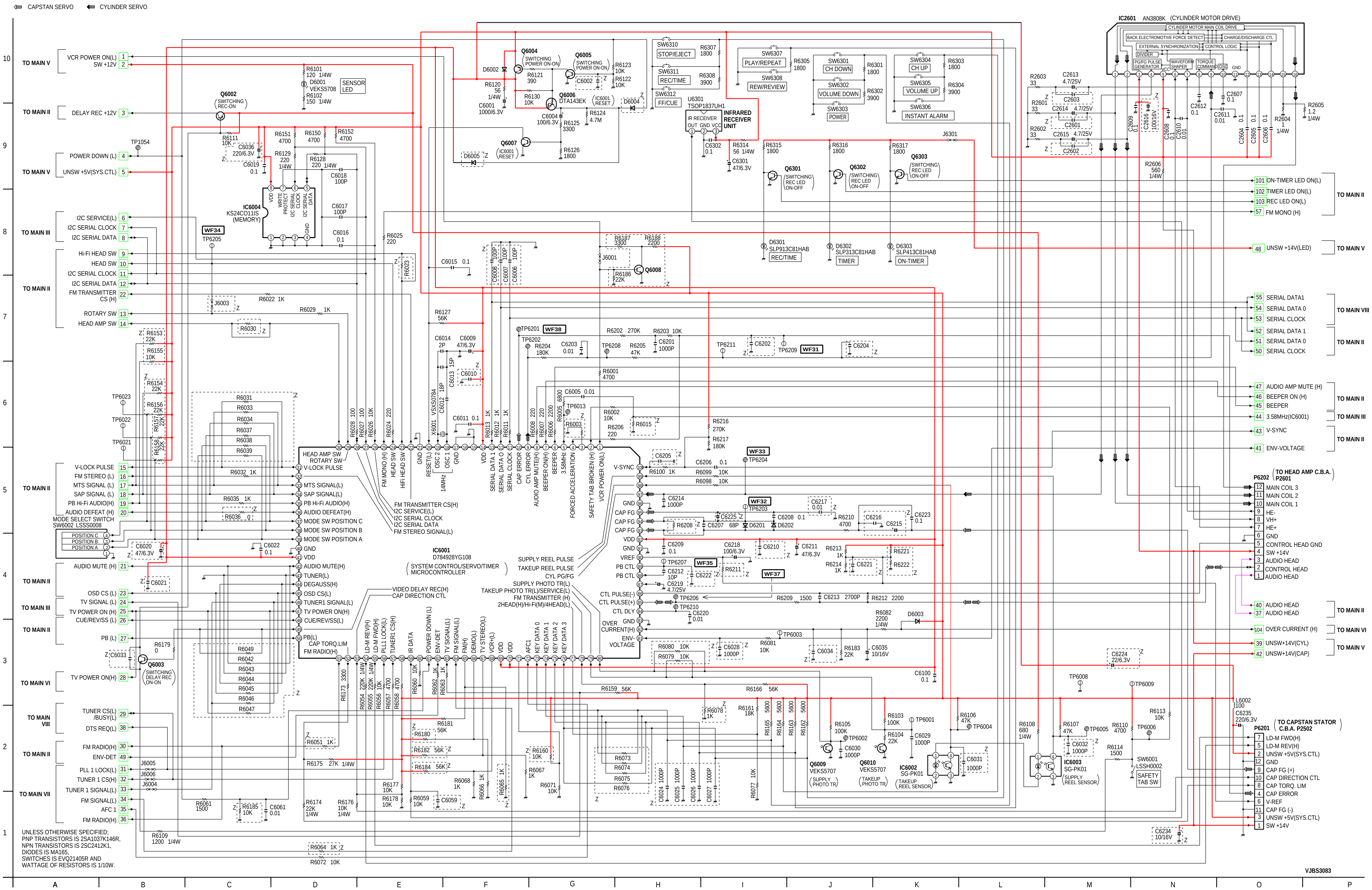
Circuit Board Layout Note

Circuit Board Layout shows components installed for various models.
For proper parts content for the model you are servicing,
please refer to the schematic diagram and parts list.

NOTE:
Circuit Board Layout includes components which are not used.

NOTE:
PARTS ENCLOSED IN DASHED LINES MARKED "Z" ARE NOT USED.

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES, REFER TO BEGINNING OF SCHEMATIC SECTION.

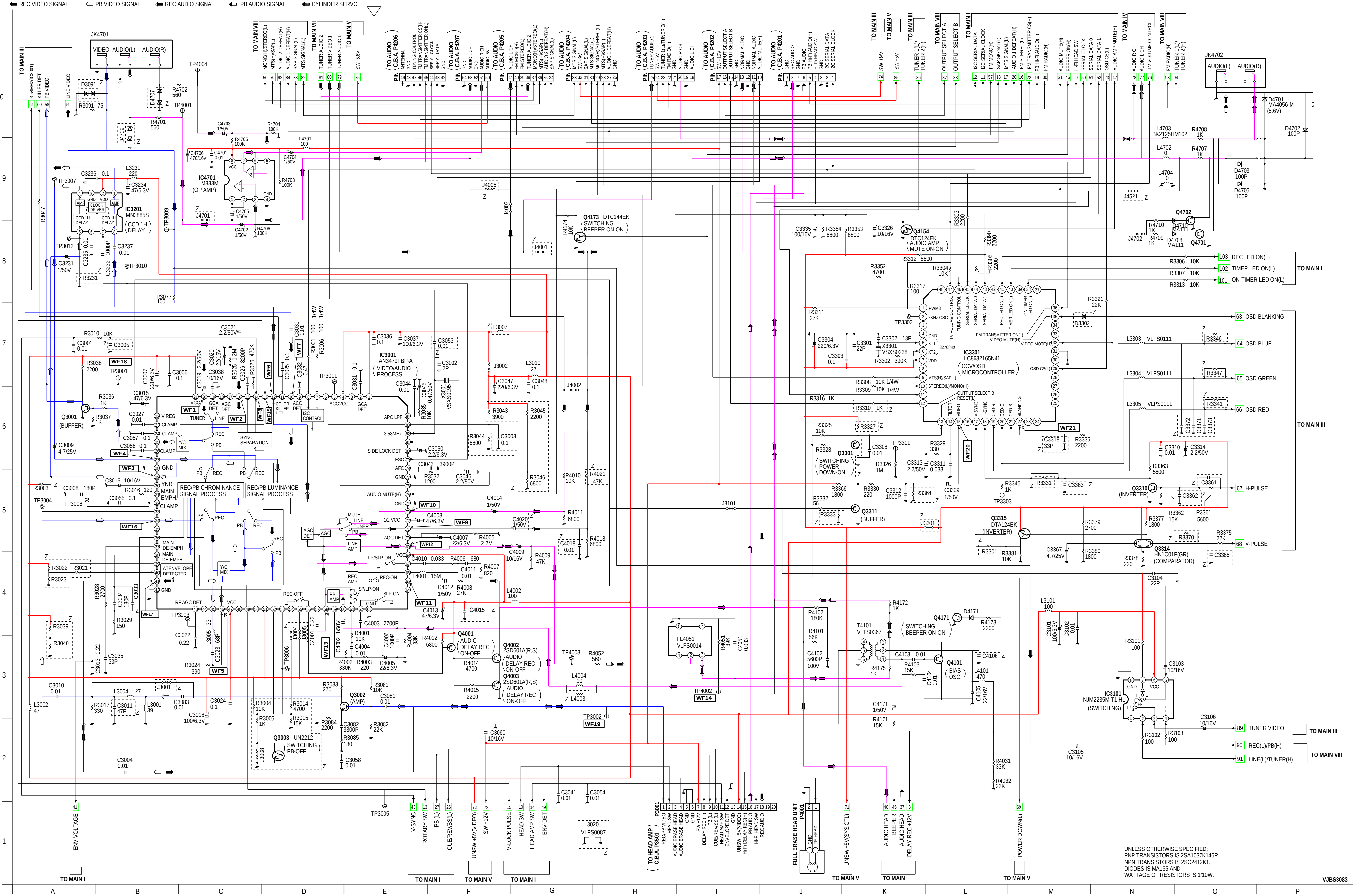

CAPSTAN SERVO
CYLINDER SERVO
IC6001
D784928YG108
SYSTEM CONTROL/SERVO/TIMER MICROCONTROLLER
IC6004
KS24CO11IS
(MEMORY)
IC2601 AN3808K (CYLINDER MOTOR DRIVE)
U6301 TSOP1837UH1
INFRARED RECEIVER UNIT
IC6002 SG-PK01
IC6003 SG-PK01
Q6002 (SWITCHING REC-ON)
Q6003 (SWITCHING DELAY REC ON-OFF)
Q6004 (SWITCHING POWER ON-ON)
Q6005 (SWITCHING POWER ON-ON)
Q6006 DTA143EK
Q6007 (IC6001 RESET)
Q6008
Q6009 VEKS5707 (SUPPLY PHOTO TR)
Q6010 VEKS5707 (TAKEUP PHOTO TR)
Q6301 (SWITCHING REC LED ON-OFF)
Q6302 (SWITCHING REC LED ON-OFF)
Q6303 (SWITCHING REC LED ON-OFF)
D6001 VEKS5708 SENSOR LED
D6301 SLP913C81HAB REC/TIME
D6302 SLP313C81HAB TIMER
D6303 SLP413C81HAB ON-TIMER
SW6310 STOP/EJECT
SW6311 REC/TIME
SW6312 FF/CUE
SW6307 PLAY/REPEAT
SW6308 REW/REVIEW
SW6301 CH DOWN
SW6302 VOLUME DOWN
SW6303 POWER
SW6304 CH UP
SW6305 VOLUME UP
SW6306 INSTANT ALARM
SW6002 LSSS0008 MODE SELECT SWITCH
SW6001 LSSH0002 SAFETY TAB SW
TO MAIN V
TO MAIN II
TO MAIN III
TO MAIN VI
TO MAIN VII
TO MAIN VIII
P6202 (TO HEAD AMP C.B.A. P2601)
P6201 (TO CAPSTAN STATOR C.B.A. P2502)
VJBS3083

UNLESS OTHERWISE SPECIFIED;
PNP TRANSISTORS IS 2SA1037K146R,
NPN TRANSISTORS IS 2SC2412K1,
DIODES IS MA165,
SWITCHES IS EVQ21405R AND
WATTAGE OF RESISTORS IS 1/10W.

VJBS3083

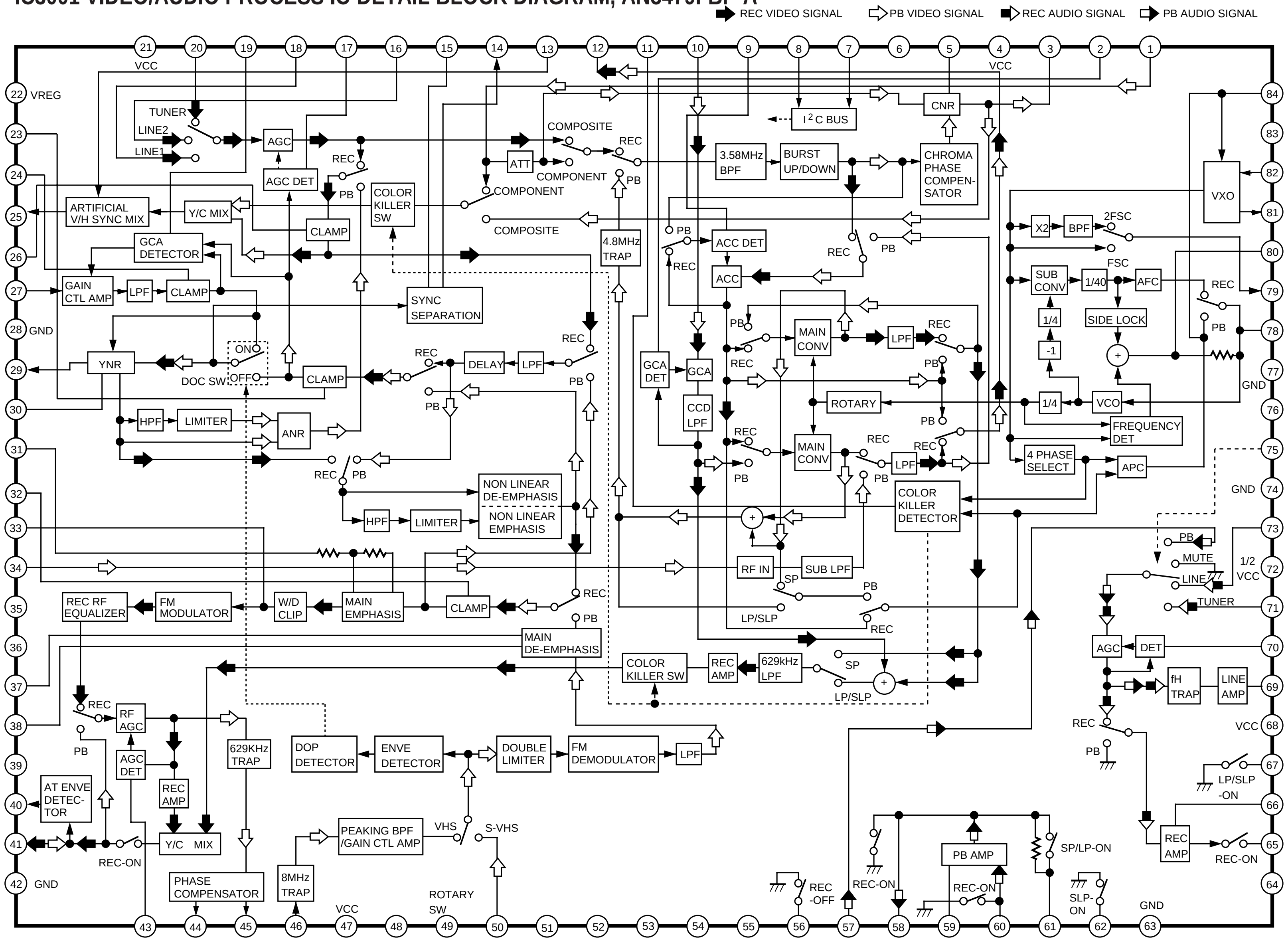
NOTE:
PARTS ENCLOSED IN DASHED LINES MARKED "Z" ARE NOT USED.

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES, REFER TO BEGINNING OF SCHEMATIC SECTION.

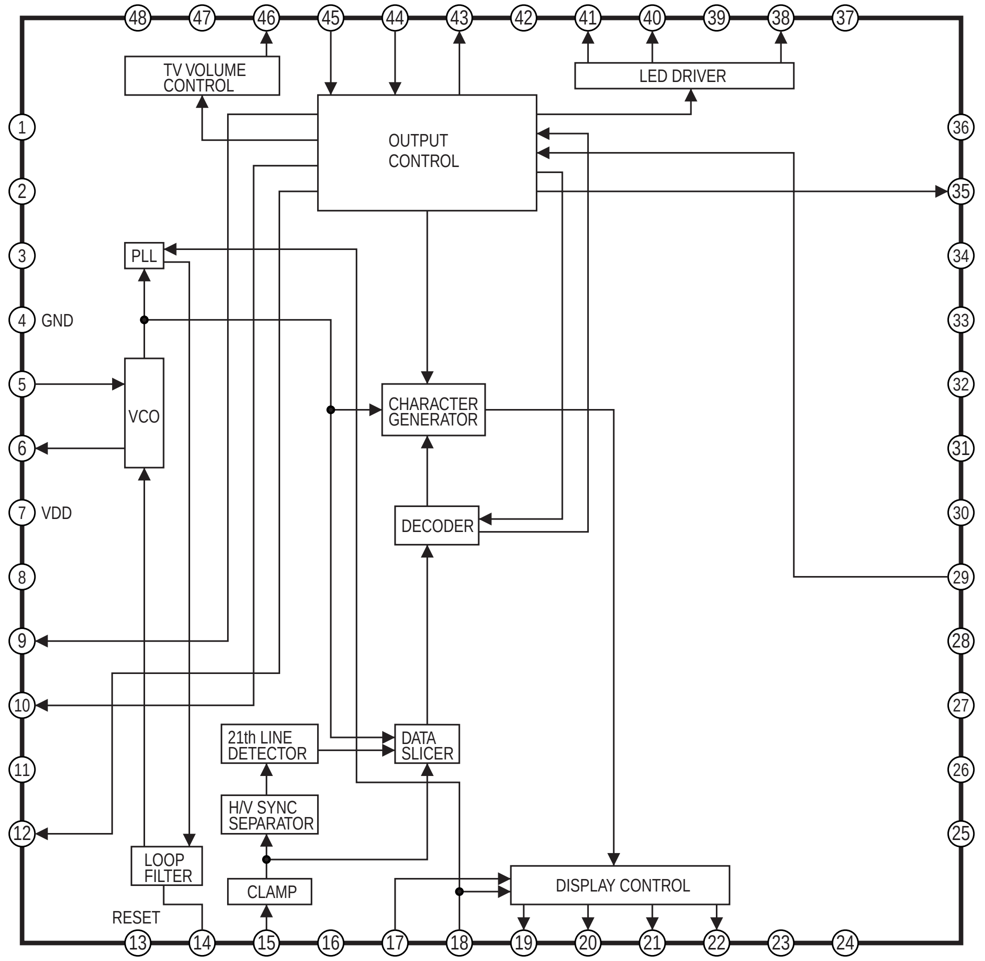

REC VIDEO SIGNAL
PB VIDEO SIGNAL
REC AUDIO SIGNAL
PB AUDIO SIGNAL
CYLINDER SERVO
JK4701
VIDEO AUDIO(L) AUDIO(R)
JK4702
AUDIO(L) AUDIO(R)
IC4701 LM833M (OP AMP)
IC3201 MN3885S (CCD 1H DELAY)
IC3001 AN3479FBP-A (VIDEO/AUDIO PROCESS)
IC3301 LC8632165N41 (CCD/OSD MICROCONTROLLER)
IC3101 NJM2235M-T1 HL (SWITCHING)
Q3001 (BUFFER)
Q3002 (AMP)
Q3003 UN2212 (SWITCHING PB-OFF)
Q4001 (AUDIO DELAY REC ON-OFF)
Q4002 2SD601A(R,S) (AUDIO DELAY REC ON-OFF)
Q4003 2SD601A(R,S) (AUDIO DELAY REC ON-OFF)
Q4173 DTC144EK (SWITCHING BEEPER ON-ON)
Q4154 DTC124EK (AUDIO AMP MUTE ON-OFF)
Q4171 (SWITCHING BEEPER ON-ON)
Q4101 (BIAS OSC)
Q3301 (SWITCHING POWER DOWN-ON)
Q3310 (INVERTER)
Q3311 (BUFFER)
Q3315 DTA124EK (INVERTER)
Q3314 HN1C01F(GR) (COMPARATOR)
Q4701
Q4702
FL4051 VLFS0014
T4101 VLTS0367
X3301 VSXS0238
X3001 VSXS0195
L3020 VLPS0087
L4703 BK2125HM102
D4701 MA4056-M (5.6V)
TO MAIN I
TO MAIN III
TO MAIN V
TO MAIN VIII
TO AUDIO C.B.A. P4206
TO AUDIO C.B.A. P4207
TO AUDIO C.B.A. P4205
TO AUDIO C.B.A. P4204
TO AUDIO C.B.A. P4203
TO AUDIO C.B.A. P4202
TO AUDIO C.B.A. P4201
TO HEAD AMP C.B.A. P3501
P3001
FULL ERASE HEAD UNIT P4001
REC LED ON(L)
TIMER LED ON(L)
ON-TIMER LED ON(L)
OSD BLANKING
OSD BLUE
OSD GREEN
OSD RED
H-PULSE
V-PULSE
TUNER VIDEO
REC(L)/PB(H)
LINE(L)/TUNER(H)
ENV-VOLTAGE
V-SYNC
ROTARY SW
PB (L)
CUE/REV/SS(L)
UNSW +5V(VIDEO)
SW +12V
V-LOCK PULSE
HEAD SW
HEAD AMP SW
ENV-DET
UNSW +5V(SYS.CTL)
AUDIO HEAD
BEEPER
AUDIO HEAD DELAY REC +12V
POWER DOWN(L)
REC/PB CHROMINANCE SIGNAL PROCESS
REC/PB LUMINANCE SIGNAL PROCESS
SYNC SEPARATION
I2C CONTROL
WF1
WF2
WF3
WF4
WF5
WF6
WF7
WF8
WF9
WF10
WF11
WF12
WF13
WF14
WF15
WF16
WF17
WF18
WF19
WF20
WF21
A B C D E F G H I J K L M N O P
1 2 3 4 5 6 7 8 9 10
VJBS3083

UNLESS OTHERWISE SPECIFIED;
PNP TRANSISTORS IS 2SA1037K146R,
NPN TRANSISTORS IS 2SC2412K1,
DIODES IS MA165 AND
WATTAGE OF RESISTORS IS 1/10W.

IC3001 VIDEO/AUDIO PROCESS IC-DETAIL BLOCK DIAGRAM, AN3479FBP-A

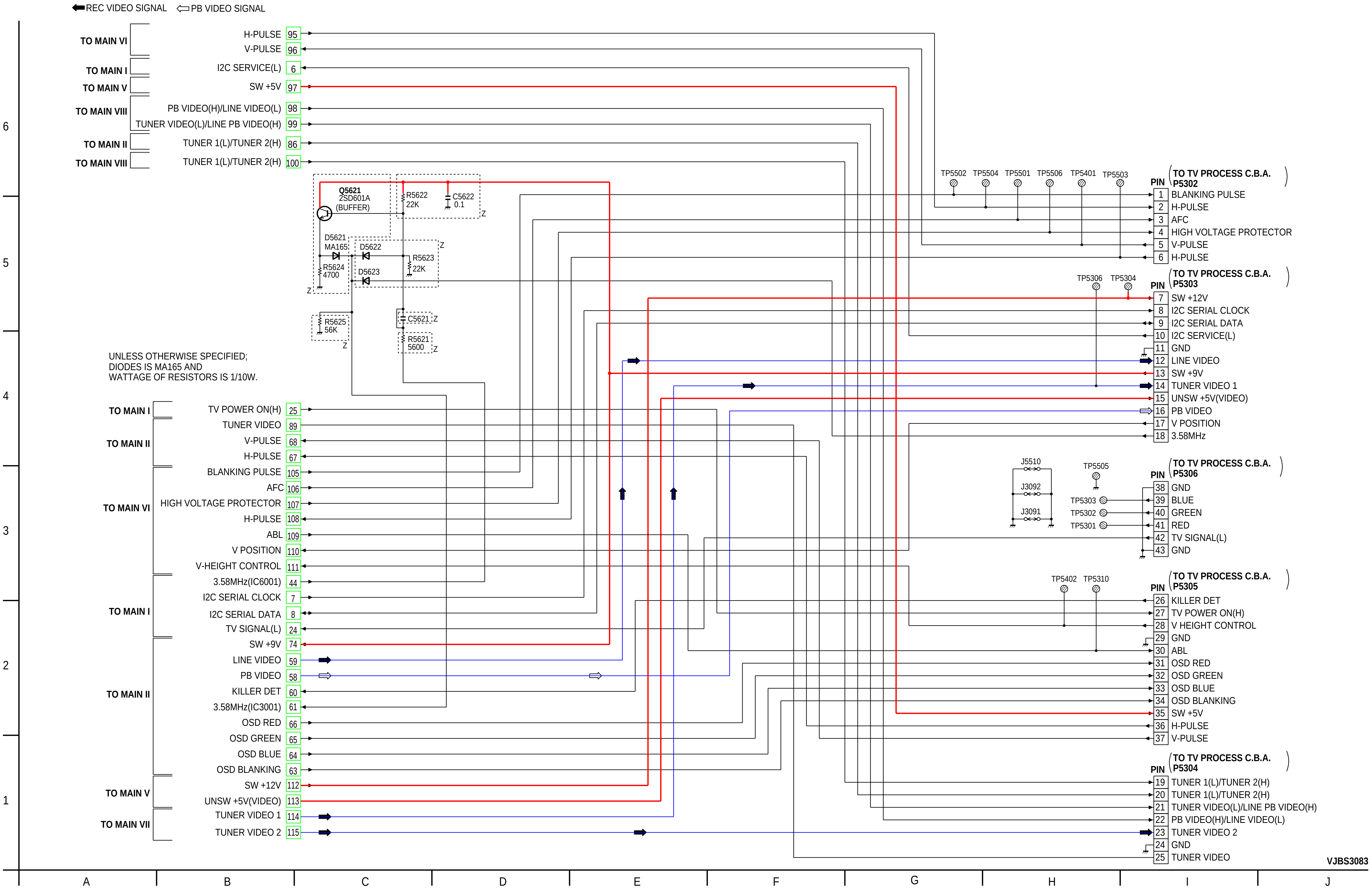

REC VIDEO SIGNAL
PB VIDEO SIGNAL
REC AUDIO SIGNAL
PB AUDIO SIGNAL
VCC
VREG
TUNER
LINE2
LINE1
AGC
AGC DET
REC
PB
COLOR KILLER SW
CLAMP
COMPOSITE
COMPONENT
ATT
ARTIFICIAL V/H SYNC MIX
Y/C MIX
GCA DETECTOR
GAIN CTL AMP
LPF
SYNC SEPARATION
4.8MHz TRAP
3.58MHz BPF
BURST UP/DOWN
I 2 C BUS
CNR
CHROMA PHASE COMPEN-SATOR
VXO
X2
BPF
2FSC
FSC
SUB CONV
1/40
AFC
1/4
-1
SIDE LOCK
ACC DET
ACC
MAIN CONV
ROTARY
VCO
FREQUENCY DET
4 PHASE SELECT
APC
GND
YNR
ON
OFF
DOC SW
DELAY
GCA DET
GCA
CCD LPF
HPF
LIMITER
ANR
NON LINEAR DE-EMPHASIS
NON LINEAR EMPHASIS
COLOR KILLER DETECTOR
RF IN
SUB LPF
SP
LP/SLP
REC RF EQUALIZER
FM MODULATOR
W/D CLIP
MAIN EMPHASIS
MAIN DE-EMPHASIS
COLOR KILLER SW
REC AMP
629kHz LPF
PB
MUTE
LINE
TUNER
1/2 VCC
DET
fH TRAP
LINE AMP
RF AGC
AGC DET
AT ENVE DETEC-TOR
629KHz TRAP
DOP DETECTOR
ENVE DETECTOR
DOUBLE LIMITER
FM DEMODULATOR
REC-ON
Y/C MIX
PHASE COMPENSATOR
8MHz TRAP
PEAKING BPF /GAIN CTL AMP
VHS
S-VHS
ROTARY SW
REC -OFF
PB AMP
SP/LP-ON
SLP-ON
LP/SLP -ON
REC AMP
1–84

IC3301 8BIT MICROCONTROLLER IC-DETAIL BLOCK DIAGRAM, LC8632165N41


TV VOLUME CONTROL
LED DRIVER
OUTPUT CONTROL
PLL
VCO
CHARACTER GENERATOR
DECODER
21th LINE DETECTOR
DATA SLICER
H/V SYNC SEPARATOR
CLAMP
LOOP FILTER
DISPLAY CONTROL
GND
VDD
RESET
1–48

NOTE:
PARTS ENCLOSED IN DASHED LINES MARKED "Z" ARE NOT USED.

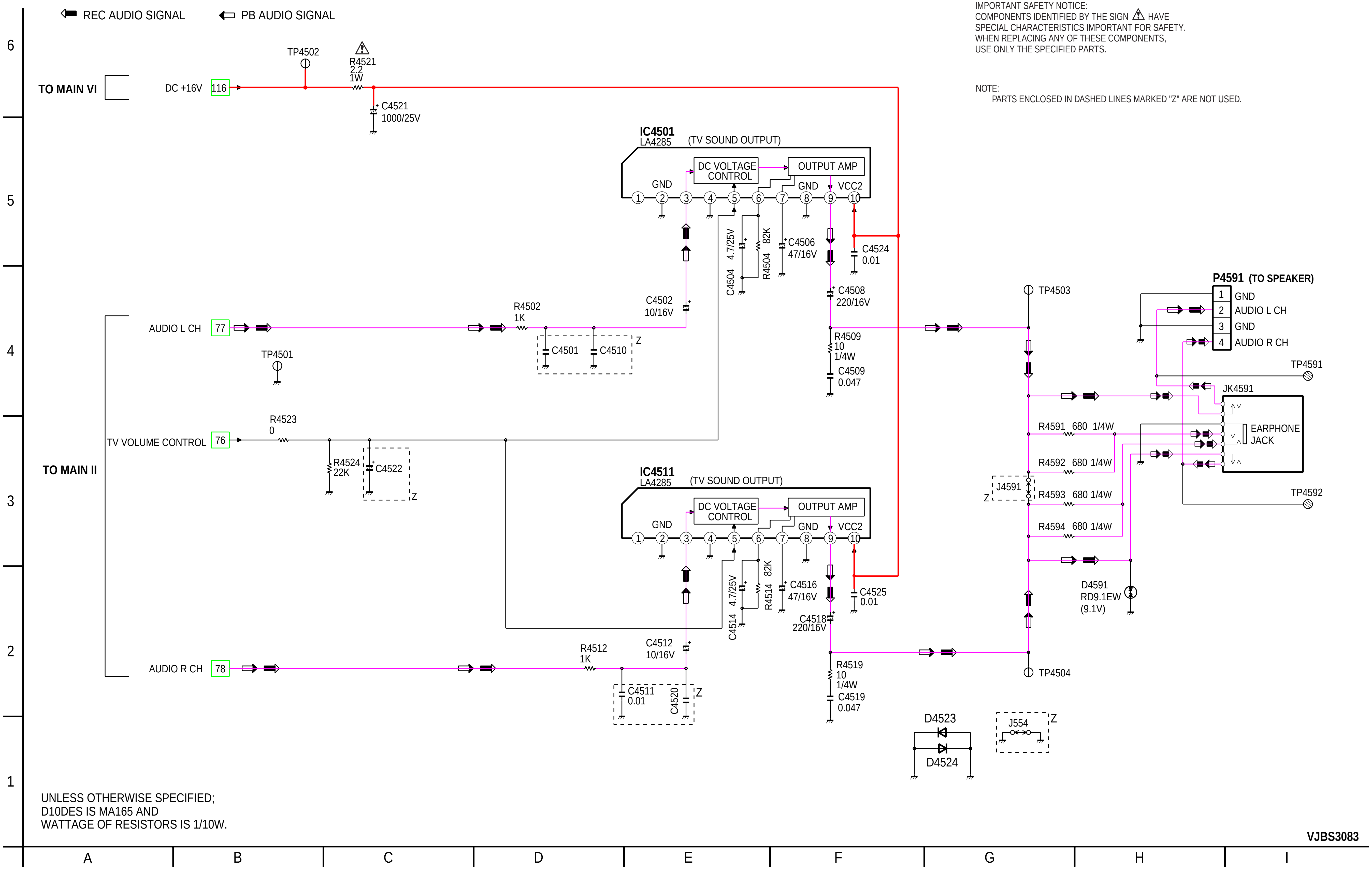
NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.


REC VIDEO SIGNAL
PB VIDEO SIGNAL
TO MAIN VI
H-PULSE 95
V-PULSE 96
TO MAIN I
I2C SERVICE(L) 6
TO MAIN V
SW +5V 97
TO MAIN VIII
PB VIDEO(H)/LINE VIDEO(L) 98
TUNER VIDEO(L)/LINE PB VIDEO(H) 99
TO MAIN II
TUNER 1(L)/TUNER 2(H) 86
TO MAIN VIII
TUNER 1(L)/TUNER 2(H) 100
Q5621
2SD601A
(BUFFER)
R5622
22K
C5622
0.1
Z
D5621
MA165
D5622
R5623
22K
R5624
4700
D5623
R5625
56K
C5621
R5621
5600
UNLESS OTHERWISE SPECIFIED;
DIODES IS MA165 AND
WATTAGE OF RESISTORS IS 1/10W.
TO MAIN I
TV POWER ON(H) 25
TO MAIN II
TUNER VIDEO 89
V-PULSE 68
H-PULSE 67
TO MAIN VI
BLANKING PULSE 105
AFC 106
HIGH VOLTAGE PROTECTOR 107
H-PULSE 108
ABL 109
V POSITION 110
V-HEIGHT CONTROL 111
TO MAIN I
3.58MHz(IC6001) 44
I2C SERIAL CLOCK 7
I2C SERIAL DATA 8
TV SIGNAL(L) 24
TO MAIN II
SW +9V 74
LINE VIDEO 59
PB VIDEO 58
KILLER DET 60
3.58MHz(IC3001) 61
OSD RED 66
OSD GREEN 65
OSD BLUE 64
OSD BLANKING 63
TO MAIN V
SW +12V 112
UNSW +5V(VIDEO) 113
TO MAIN VII
TUNER VIDEO 1 114
TUNER VIDEO 2 115
TP5502 TP5504 TP5501 TP5506 TP5401 TP5503
TO TV PROCESS C.B.A. P5302
PIN
1 BLANKING PULSE
2 H-PULSE
3 AFC
4 HIGH VOLTAGE PROTECTOR
5 V-PULSE
6 H-PULSE
TP5306 TP5304
TO TV PROCESS C.B.A. P5303
PIN
7 SW +12V
8 I2C SERIAL CLOCK
9 I2C SERIAL DATA
10 I2C SERVICE(L)
11 GND
12 LINE VIDEO
13 SW +9V
14 TUNER VIDEO 1
15 UNSW +5V(VIDEO)
16 PB VIDEO
17 V POSITION
18 3.58MHz
J5510
J3092
J3091
TP5505
TP5303
TP5302
TP5301
TO TV PROCESS C.B.A. P5306
PIN
38 GND
39 BLUE
40 GREEN
41 RED
42 TV SIGNAL(L)
43 GND
TP5402 TP5310
TO TV PROCESS C.B.A. P5305
PIN
26 KILLER DET
27 TV POWER ON(H)
28 V HEIGHT CONTROL
29 GND
30 ABL
31 OSD RED
32 OSD GREEN
33 OSD BLUE
34 OSD BLANKING
35 SW +5V
36 H-PULSE
37 V-PULSE
TO TV PROCESS C.B.A. P5304
PIN
19 TUNER 1(L)/TUNER 2(H)
20 TUNER 1(L)/TUNER 2(H)
21 TUNER VIDEO(L)/LINE PB VIDEO(H)
22 PB VIDEO(H)/LINE VIDEO(L)
23 TUNER VIDEO 2
24 GND
25 TUNER VIDEO
VJBS3083
6 5 4 3 2 1
A B C D E F G H I J

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN ⚠ HAVE
SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,
USE ONLY THE SPECIFIED PARTS.

NOTE:
PARTS ENCLOSED IN DASHED LINES MARKED "Z" ARE NOT USED.


REC AUDIO SIGNAL
PB AUDIO SIGNAL
TO MAIN VI
DC +16V
116
TP4502
R4521
2.2
1W
C4521
1000/25V
IC4501
LA4285
(TV SOUND OUTPUT)
DC VOLTAGE CONTROL
OUTPUT AMP
GND
GND
VCC2
1
2
3
4
5
6
7
8
9
10
C4504 4.7/25V
R4504 82K
C4506
47/16V
C4524
0.01
C4508
220/16V
R4509
10
1/4W
C4509
0.047
C4502
10/16V
R4502
1K
C4501
C4510
Z
TO MAIN II
AUDIO L CH
77
TP4501
TV VOLUME CONTROL
76
R4523
0
R4524
22K
C4522
Z
AUDIO R CH
78
R4512
1K
C4511
0.01
C4520
Z
C4512
10/16V
IC4511
LA4285
(TV SOUND OUTPUT)
DC VOLTAGE CONTROL
OUTPUT AMP
GND
GND
VCC2
C4514 4.7/25V
R4514 82K
C4516
47/16V
C4525
0.01
C4518
220/16V
R4519
10
1/4W
C4519
0.047
TP4503
TP4504
P4591 (TO SPEAKER)
1 GND
2 AUDIO L CH
3 GND
4 AUDIO R CH
TP4591
JK4591
EARPHONE JACK
R4591 680 1/4W
R4592 680 1/4W
R4593 680 1/4W
R4594 680 1/4W
J4591
Z
TP4592
D4591
RD9.1EW
(9.1V)
D4523
D4524
J554
Z
6
5
4
3
2
1
A
B
C
D
E
F
G
H
I

UNLESS OTHERWISE SPECIFIED;
D10DES IS MA165 AND
WATTAGE OF RESISTORS IS 1/10W.

VJBS3083

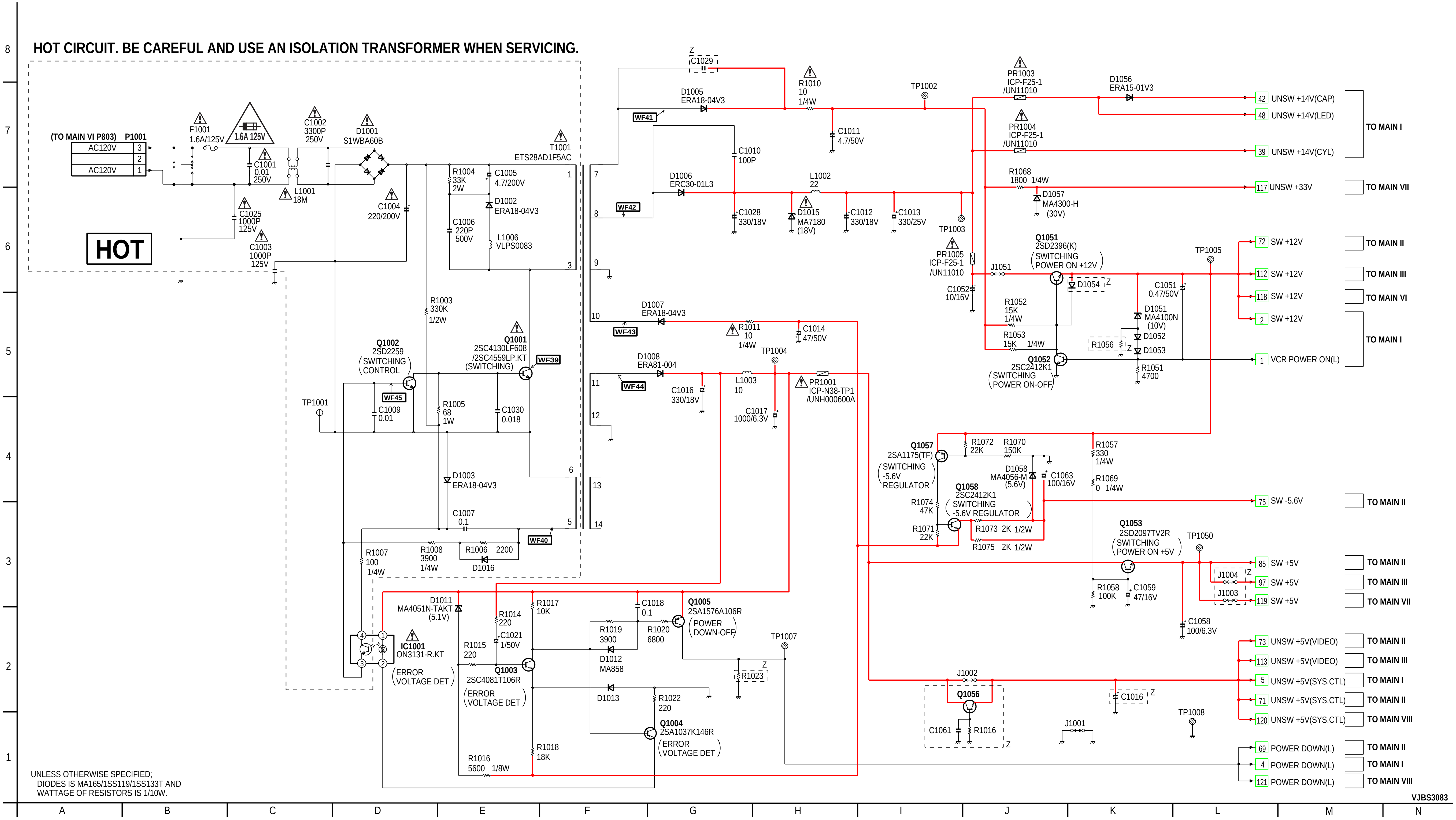
CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE 1.6A 125V FUSE.
ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES
D'T INCENDIE N'I UTILISERQUE DES FUSIBLE DE MÉME
TYPE 1.6A 125V

⚠ 1.6A 125V

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN ⚠ HAVE
SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,
USE ONLY THE SPECIFIED PARTS.

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

NOTE:
PARTS ENCLOSED IN DASHED LINES MARKED "Z" ARE NOT USED.

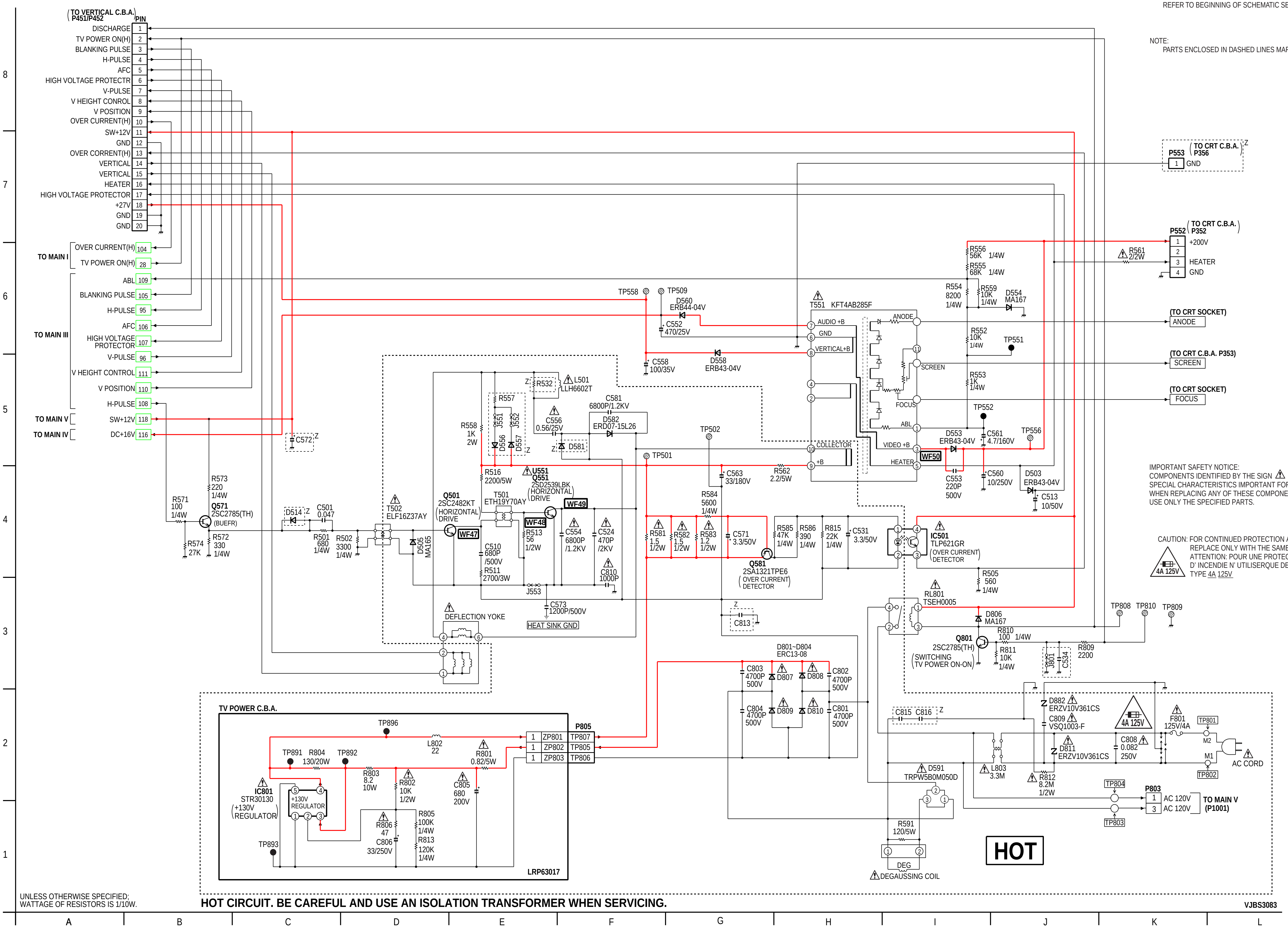

HOT CIRCUIT. BE CAREFUL AND USE AN ISOLATION TRANSFORMER WHEN SERVICING.
HOT
(TO MAIN VI P803) P1001
AC120V
AC120V
F1001 1.6A/125V
1.6A 125V
C1001 0.01 250V
C1002 3300P 250V
D1001 S1WBA60B
L1001 18M
C1025 1000P 125V
C1003 1000P 125V
C1004 220/200V
T1001 ETS28AD1F5AC
R1004 33K 2W
C1005 4.7/200V
D1002 ERA18-04V3
C1006 220P 500V
L1006 VLPS0083
R1003 330K 1/2W
Q1001 2SC4130LF608 /2SC4559LP.KT (SWITCHING)
Q1002 2SD2259 (SWITCHING CONTROL)
WF39
WF45
TP1001
C1009 0.01
R1005 68 1W
C1030 0.018
D1003 ERA18-04V3
C1007 0.1
WF40
R1007 100 1/4W
R1008 3900 1/4W
R1006 2200
D1016
IC1001 ON3131-R.KT (ERROR VOLTAGE DET)
D1011 MA4051N-TAKT (5.1V)
R1015 220
R1014 220
C1021 1/50V
R1017 10K
Q1003 2SC4081T106R (ERROR VOLTAGE DET)
C1018 0.1
R1019 3900
R1020 6800
D1012 MA858
D1013
R1022 220
Q1004 2SA1037K146R (ERROR VOLTAGE DET)
R1018 18K
R1016 5600 1/8W
Q1005 2SA1576A106R (POWER DOWN-OFF)
TP1007
R1023
C1029
D1005 ERA18-04V3
WF41
R1010 10 1/4W
C1011 4.7/50V
TP1002
C1010 100P
D1006 ERC30-01L3
WF42
L1002 22
C1028 330/18V
D1015 MA7180 (18V)
C1012 330/18V
C1013 330/25V
TP1003
PR1003 ICP-F25-1 /UN11010
PR1004 ICP-F25-1 /UN11010
D1056 ERA15-01V3
R1068 1800 1/4W
D1057 MA4300-H (30V)
PR1005 ICP-F25-1 /UN11010
J1051
C1052 10/16V
Q1051 2SD2396(K) (SWITCHING POWER ON +12V)
D1054
TP1005
C1051 0.47/50V
D1051 MA4100N (10V)
D1052
D1053
R1056
R1051 4700
R1052 15K 1/4W
R1053 15K 1/4W
Q1052 2SC2412K1 (SWITCHING POWER ON-OFF)
D1007 ERA18-04V3
WF43
R1011 10 1/4W
C1014 47/50V
TP1004
D1008 ERA81-004
WF44
L1003 10
PR1001 ICP-N38-TP1 /UNH000600A
C1016 330/18V
C1017 1000/6.3V
Q1057 2SA1175(TF) (SWITCHING -5.6V REGULATOR)
R1072 22K
R1070 150K
D1058 MA4056-M (5.6V)
C1063 100/16V
Q1058 2SC2412K1 (SWITCHING -5.6V REGULATOR)
R1074 47K
R1071 22K
R1073 2K 1/2W
R1075 2K 1/2W
R1057 330 1/4W
R1069 0 1/4W
Q1053 2SD2097TV2R (SWITCHING POWER ON +5V)
TP1050
J1004
J1003
R1058 100K
C1059 47/16V
C1058 100/6.3V
J1002
Q1056
C1061
R1016
C1016
TP1008
J1001
Z
42 UNSW +14V(CAP)
48 UNSW +14V(LED)
TO MAIN I
39 UNSW +14V(CYL)
117 UNSW +33V
TO MAIN VII
72 SW +12V
TO MAIN II
112 SW +12V
TO MAIN III
118 SW +12V
TO MAIN VI
2 SW +12V
TO MAIN I
1 VCR POWER ON(L)
75 SW -5.6V
TO MAIN II
85 SW +5V
TO MAIN II
97 SW +5V
TO MAIN III
119 SW +5V
TO MAIN VII
73 UNSW +5V(VIDEO)
TO MAIN II
113 UNSW +5V(VIDEO)
TO MAIN III
5 UNSW +5V(SYS.CTL)
TO MAIN I
71 UNSW +5V(SYS.CTL)
TO MAIN II
120 UNSW +5V(SYS.CTL)
TO MAIN VIII
69 POWER DOWN(L)
TO MAIN II
4 POWER DOWN(L)
TO MAIN I
121 POWER DOWN(L)
TO MAIN VIII
A B C D E F G H I J K L M N
1 2 3 4 5 6 7 8

UNLESS OTHERWISE SPECIFIED;
DIODES IS MA165/1SS119/1SS133T AND
WATTAGE OF RESISTORS IS 1/10W.

VJBS3083

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

NOTE:
PARTS ENCLOSED IN DASHED LINES MARKED "Z" ARE NOT USED.



TO VERTICAL C.B.A. P451/P452
PIN
DISCHARGE 1
TV POWER ON(H) 2
BLANKING PULSE 3
H-PULSE 4
AFC 5
HIGH VOLTAGE PROTECTR 6
V-PULSE 7
V HEIGHT CONROL 8
V POSITION 9
OVER CURRENT(H) 10
SW+12V 11
GND 12
OVER CORRENT(H) 13
VERTICAL 14
VERTICAL 15
HEATER 16
HIGH VOLTAGE PROTECTOR 17
+27V 18
GND 19
GND 20
TO MAIN I
OVER CURRENT(H) 104
TV POWER ON(H) 28
TO MAIN III
ABL 109
BLANKING PULSE 105
H-PULSE 95
AFC 106
HIGH VOLTAGE PROTECTOR 107
V-PULSE 96
V HEIGHT CONTROL 111
V POSITION 110
H-PULSE 108
TO MAIN V
SW+12V 118
TO MAIN IV
DC+16V 116
C572 Z
R571 100 1/4W
R574 27K
R573 220 1/4W
Q571 2SC2785(TH) (BUEFR)
R572 330 1/4W
D514 Z
C501 0.047
R501 680 1/4W
R502 3300 1/4W
T502 ELF16Z37AY
D505 MA165
Q501 2SC2482KT (HORIZONTAL DRIVE)
WF47
R557
J551
J552
D556
D557 Z
R558 1K 2W
R516 2200/5W
T501 ETH19Y70AY
U551
Q551 2SD2539LBK (HORIZONTAL DRIVE)
WF49
WF48
R513 56 1/2W
C554 6800P /1.2KV
C524 470P /2KV
C810 1000P
C510 680P /500V
R511 2700/3W
J553
C573 1200P/500V
HEAT SINK GND
DEFLECTION YOKE
Z R532
L501 LLH6602T
C556 0.56/25V
C581 6800P/1.2KV
D582 ERD07-15L26
Z D581
TP558
TP509
D560 ERB44-04V
C552 470/25V
C558 100/35V
D558 ERB43-04V
TP501
TP502
C563 33/180V
R562 2.2/5W
R584 5600 1/4W
R581 1.5 1/2W
R582 1.5 1/2W
R583 1.2 1/2W
C571 3.3/50V
Q581 2SA1321TPE6 (OVER CURRENT DETECTOR)
R585 47K 1/4W
R586 390 1/4W
R815 22K 1/4W
C531 3.3/50V
Z C813
T551 KFT4AB285F
AUDIO +B
GND
VERTICAL+B
COLLECTOR
+B
ANODE
SCREEN
FOCUS
ABL
VIDEO +B
HEATER
WF50
R556 56K 1/4W
R555 68K 1/4W
R554 8200 1/4W
R559 10K 1/4W
D554 MA167
R552 10K 1/4W
TP551
R553 1K 1/4W
TP552
D553 ERB43-04V
C561 4.7/160V
TP556
C553 220P 500V
C560 10/250V
D503 ERB43-04V
C513 10/50V
IC501 TLP621GR (OVER CURRENT DETECTOR)
R505 560 1/4W
RL801 TSEH0005
D806 MA167
Q801 2SC2785(TH) (SWITCHING TV POWER ON-ON)
R810 100 1/4W
R811 10K 1/4W
J801
C534
R809 2200
TP808
TP810
TP809
P553 (TO CRT C.B.A. P356) Z
1 GND
P552 (TO CRT C.B.A. P352)
1 +200V
2
3 HEATER
4 GND
R561 2/2W
(TO CRT SOCKET) ANODE
(TO CRT C.B.A. P353) SCREEN
(TO CRT SOCKET) FOCUS
D801~D804 ERC13-08
C803 4700P 500V
D807
D808
C802 4700P 500V
C804 4700P 500V
D809
D810
C801 4700P 500V
C815 C816 Z
D882 ERZV10V361CS
C809 VSQ1003-F
D811 ERZV10V361CS
C808 0.082 250V
4A 125V
F801 125V/4A
TP801
TP802
M2
M1
AC CORD
D591 TRPW5B0M050D
L803 3.3M
R812 8.2M 1/2W
TP804
TP803
P803
1 AC 120V
3 AC 120V
TO MAIN V (P1001)
R591 120/5W
DEG
DEGAUSSING COIL
HOT
TV POWER C.B.A.
TP896
TP891
R804 130/20W
TP892
L802 22
R801 0.82/5W
P805
1 ZP801 TP807
1 ZP802 TP805
1 ZP803 TP806
R803 8.2 10W
R802 10K 1/2W
C805 680 200V
IC801 STR30130 (+130V REGULATOR)
+130V REGULATOR
R806 47
C806 33/250V
R805 100K 1/4W
R813 120K 1/4W
TP893
LRP63017
1 2 3 4 5 6 7 8
A B C D E F G H I J K L

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN ⚠ HAVE
SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,
USE ONLY THE SPECIFIED PARTS.

CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE 4A 125V FUSE.
ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES
D' INCENDIE N' UTILISERQUE DES FUSIBLE DE MÉME
TYPE 4A 125V

UNLESS OTHERWISE SPECIFIED;
WATTAGE OF RESISTORS IS 1/10W.

HOT CIRCUIT. BE CAREFUL AND USE AN ISOLATION TRANSFORMER WHEN SERVICING.

VJBS3083

NOTE:
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NOTE:
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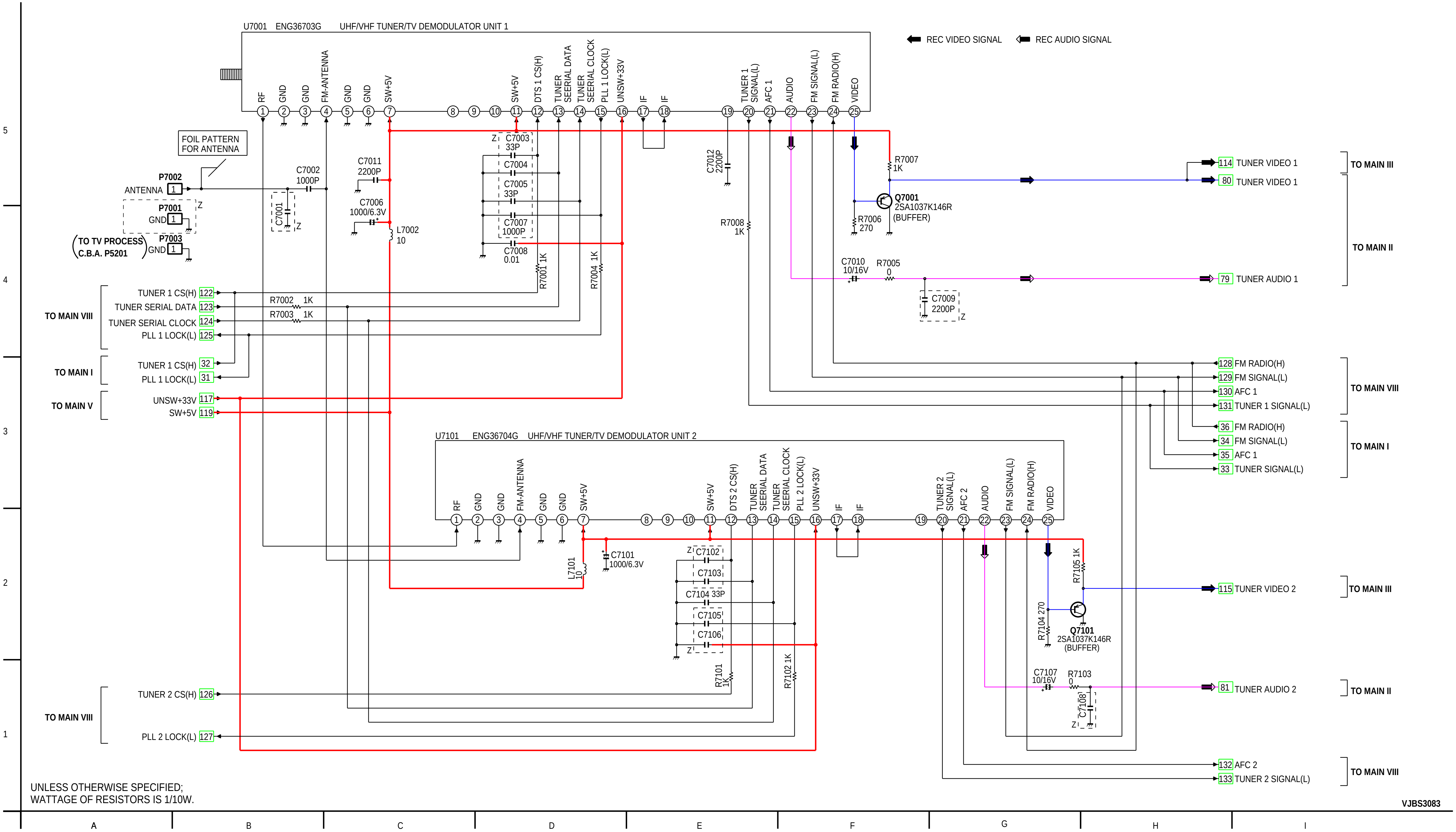
U7001 ENG36703G UHF/VHF TUNER/TV DEMODULATOR UNIT 1
RF
GND
GND
FM-ANTENNA
GND
GND
SW+5V
SW+5V
DTS 1 CS(H)
TUNER SERIAL DATA
TUNER SEERIAL CLOCK
PLL 1 LOCK(L)
UNSW+33V
IF
IF
TUNER 1 SIGNAL(L)
AFC 1
AUDIO
FM SIGNAL(L)
FM RADIO(H)
VIDEO
REC VIDEO SIGNAL
REC AUDIO SIGNAL
FOIL PATTERN FOR ANTENNA
P7002
ANTENNA
P7001
GND
P7003
GND
TO TV PROCESS C.B.A. P5201
C7001
C7002 1000P
C7011 2200P
C7006 1000/6.3V
L7002 10
C7003 33P
C7004
C7005 33P
C7007 1000P
C7008 0.01
R7001 1K
R7004 1K
C7012 2200P
R7008 1K
R7007 1K
Q7001 2SA1037K146R (BUFFER)
R7006 270
C7010 10/16V
R7005 0
C7009 2200P
Z
TO MAIN VIII
TUNER 1 CS(H) 122
TUNER SERIAL DATA 123
TUNER SERIAL CLOCK 124
PLL 1 LOCK(L) 125
R7002 1K
R7003 1K
TO MAIN I
TUNER 1 CS(H) 32
PLL 1 LOCK(L) 31
TO MAIN V
UNSW+33V 117
SW+5V 119
114 TUNER VIDEO 1
80 TUNER VIDEO 1
TO MAIN III
TO MAIN II
79 TUNER AUDIO 1
128 FM RADIO(H)
129 FM SIGNAL(L)
130 AFC 1
131 TUNER 1 SIGNAL(L)
TO MAIN VIII
36 FM RADIO(H)
34 FM SIGNAL(L)
35 AFC 1
33 TUNER SIGNAL(L)
TO MAIN I
U7101 ENG36704G UHF/VHF TUNER/TV DEMODULATOR UNIT 2
DTS 2 CS(H)
PLL 2 LOCK(L)
TUNER 2 SIGNAL(L)
AFC 2
C7101 1000/6.3V
L7101 10
C7102
C7103
C7104 33P
C7105
C7106
R7101 1K
R7102 1K
R7105 1K
R7104 270
Q7101 2SA1037K146R (BUFFER)
C7107 10/16V
R7103 0
C7108
115 TUNER VIDEO 2
TO MAIN III
81 TUNER AUDIO 2
TO MAIN II
TO MAIN VIII
TUNER 2 CS(H) 126
PLL 2 LOCK(L) 127
132 AFC 2
133 TUNER 2 SIGNAL(L)
TO MAIN VIII
A
B
C
D
E
F
G
H
I
1
2
3
4
5

UNLESS OTHERWISE SPECIFIED;
WATTAGE OF RESISTORS IS 1/10W.

NOTE:
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REFER TO BEGINNING OF SCHEMATIC SECTION.

NOTE:
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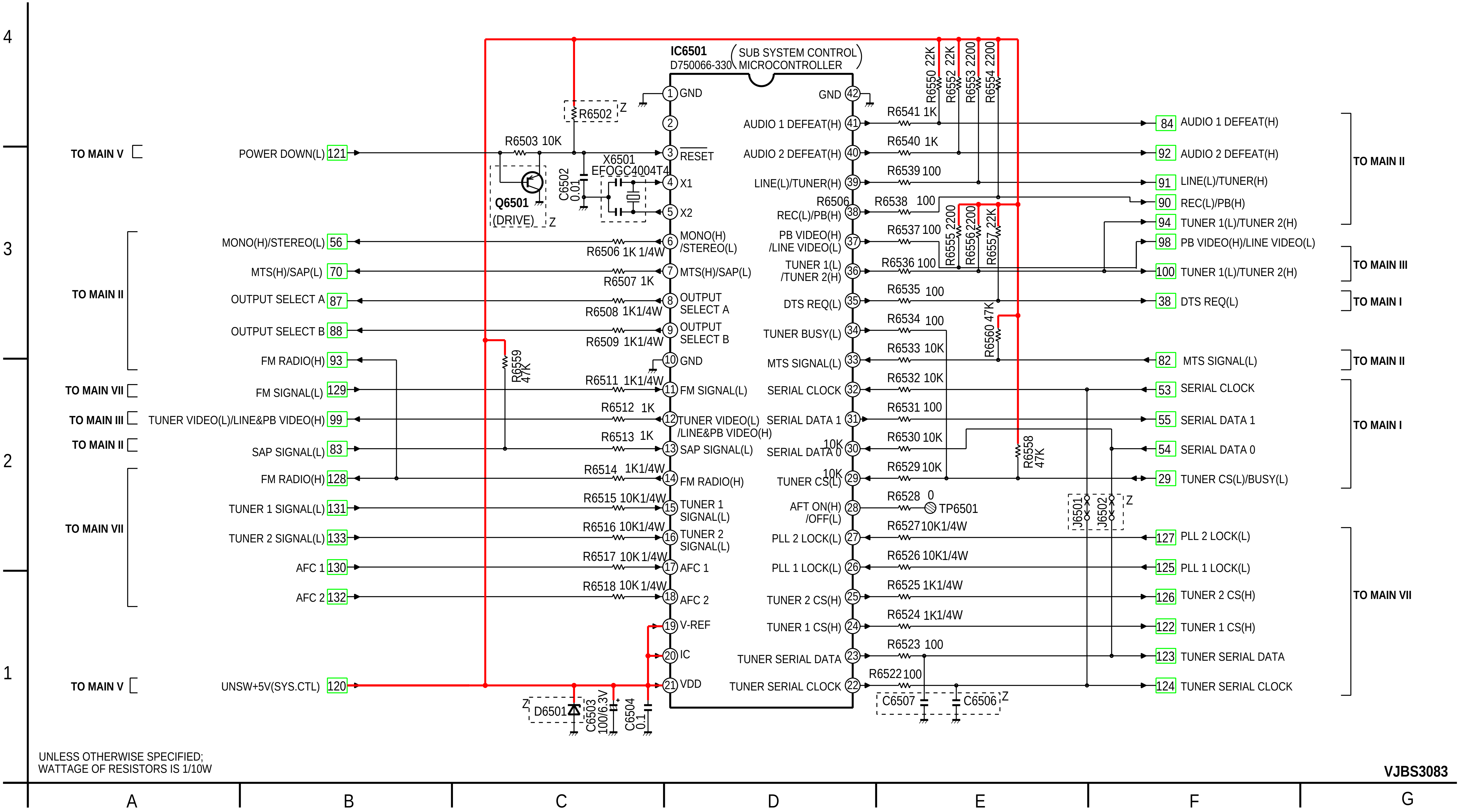
IC6501
D750066-330
SUB SYSTEM CONTROL MICROCONTROLLER
1 GND
2
3 RESET
4 X1
5 X2
6 MONO(H)/STEREO(L)
7 MTS(H)/SAP(L)
8 OUTPUT SELECT A
9 OUTPUT SELECT B
10 GND
11 FM SIGNAL(L)
12 TUNER VIDEO(L)/LINE&PB VIDEO(H)
13 SAP SIGNAL(L)
14 FM RADIO(H)
15 TUNER 1 SIGNAL(L)
16 TUNER 2 SIGNAL(L)
17 AFC 1
18 AFC 2
19 V-REF
20 IC
21 VDD
22 TUNER SERIAL CLOCK
23 TUNER SERIAL DATA
24 TUNER 1 CS(H)
25 TUNER 2 CS(H)
26 PLL 1 LOCK(L)
27 PLL 2 LOCK(L)
28 AFT ON(H)/OFF(L)
29 TUNER CS(L)
30 SERIAL DATA 0
31 SERIAL DATA 1
32 SERIAL CLOCK
33 MTS SIGNAL(L)
34 TUNER BUSY(L)
35 DTS REQ(L)
36 TUNER 1(L)/TUNER 2(H)
37 PB VIDEO(H)/LINE VIDEO(L)
38 REC(L)/PB(H)
39 LINE(L)/TUNER(H)
40 AUDIO 2 DEFEAT(H)
41 AUDIO 1 DEFEAT(H)
42 GND
TO MAIN V
POWER DOWN(L) 121
R6503 10K
R6502 Z
X6501 EFOGC4004T4
C6502 0.01
Q6501 (DRIVE) Z
TO MAIN II
MONO(H)/STEREO(L) 56
R6506 1K 1/4W
MTS(H)/SAP(L) 70
R6507 1K
OUTPUT SELECT A 87
R6508 1K1/4W
OUTPUT SELECT B 88
R6509 1K1/4W
FM RADIO(H) 93
TO MAIN VII
FM SIGNAL(L) 129
R6511 1K1/4W
TO MAIN III
TUNER VIDEO(L)/LINE&PB VIDEO(H) 99
R6512 1K
TO MAIN II
SAP SIGNAL(L) 83
R6513 1K
R6559 47K
FM RADIO(H) 128
R6514 1K1/4W
TO MAIN VII
TUNER 1 SIGNAL(L) 131
R6515 10K1/4W
TUNER 2 SIGNAL(L) 133
R6516 10K1/4W
AFC 1 130
R6517 10K 1/4W
AFC 2 132
R6518 10K 1/4W
TO MAIN V
UNSW+5V(SYS.CTL) 120
Z D6501
C6503 100/6.3V
C6504 0.1
R6550 22K
R6552 22K
R6553 2200
R6554 2200
R6541 1K
84 AUDIO 1 DEFEAT(H)
R6540 1K
92 AUDIO 2 DEFEAT(H)
R6539 100
91 LINE(L)/TUNER(H)
R6538 100
R6506
90 REC(L)/PB(H)
TO MAIN II
94 TUNER 1(L)/TUNER 2(H)
R6537 100
R6555 2200
R6556 2200
R6557 22K
98 PB VIDEO(H)/LINE VIDEO(L)
R6536 100
100 TUNER 1(L)/TUNER 2(H)
TO MAIN III
R6535 100
38 DTS REQ(L)
TO MAIN I
R6534 100
R6560 47K
R6533 10K
82 MTS SIGNAL(L)
TO MAIN II
R6532 10K
53 SERIAL CLOCK
R6531 100
55 SERIAL DATA 1
R6530 10K
10K
R6558 47K
54 SERIAL DATA 0
TO MAIN I
R6529 10K
10K
29 TUNER CS(L)/BUSY(L)
R6528 0
TP6501
J6501
J6502
Z
R6527 10K1/4W
127 PLL 2 LOCK(L)
R6526 10K1/4W
125 PLL 1 LOCK(L)
R6525 1K1/4W
126 TUNER 2 CS(H)
R6524 1K1/4W
122 TUNER 1 CS(H)
TO MAIN VII
R6523 100
123 TUNER SERIAL DATA
R6522 100
124 TUNER SERIAL CLOCK
C6507
C6506 Z
1
2
3
4
A
B
C
D
E
F
G

UNLESS OTHERWISE SPECIFIED;
WATTAGE OF RESISTORS IS 1/10W

VJBS3083

NOTE:
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NOTE:
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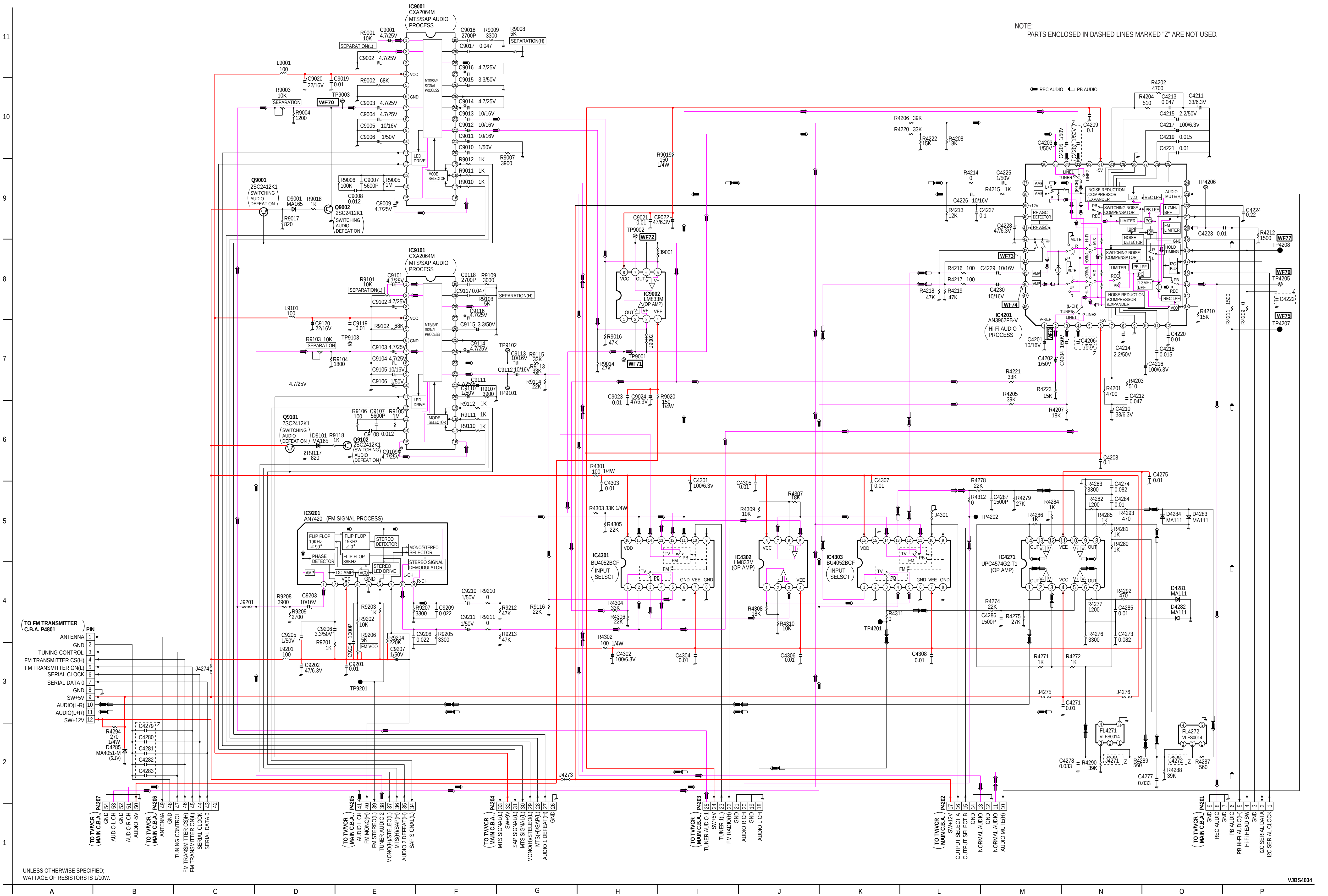
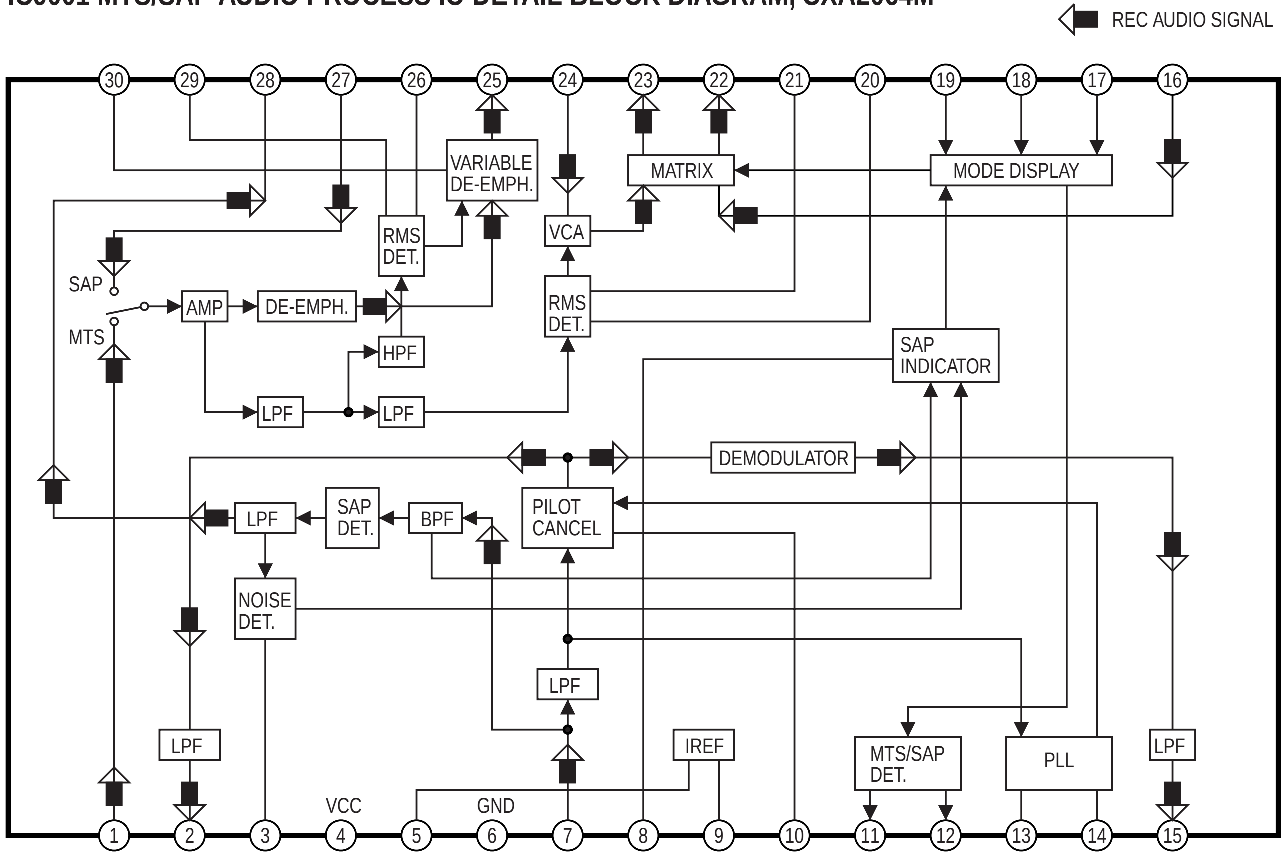


IC9001 CXA2064M MTS/SAP AUDIO PROCESS
IC9101 CXA2064M MTS/SAP AUDIO PROCESS
MTS/SAP SIGNAL PROCESS
LED DRIVE
MODE SELECTOR
Q9001 2SC2412K1 SWITCHING AUDIO DEFEAT ON
Q9002 2SC2412K1 SWITCHING AUDIO DEFEAT ON
Q9101 2SC2412K1 SWITCHING AUDIO DEFEAT ON
Q9102 2SC2412K1 SWITCHING AUDIO DEFEAT ON
D9001 MA165
D9101 MA165
SEPARATION(L)
SEPARATION(H)
SEPARATION
WF70
WF71
WF72
WF73
WF74
WF75
WF76
WF77
IC9002 LM833M (OP AMP)
IC9201 AN7420 (FM SIGNAL PROCESS)
FLIP FLOP 19KHz ∠90°
FLIP FLOP 19KHz ∠0°
STEREO DETECTOR
PHASE DETECTOR
FLIP FLOP 38KHz
MONO/STEREO SELECTOR
STEREO SIGNAL DEMODULATOR
STEREO LED DRIVE
DC AMP
VCO
AMP
IC4201 AN3962FB-V Hi-Fi AUDIO PROCESS
NOISE REDUCTION /COMPRESSOR /EXPANDER
SWITCHING NOISE COMPENSATOR
LIMITER
NOISE DETECTOR
RF AGC DETECTOR
RF AGC
AUDIO MUTE(H)
1.7MHz BPF
1.3MHz BPF
FM LIMITER
HOLD TIMING
I2C BUS
REC LPF
PB LPF
REC AUDIO
PB AUDIO
IC4301 BU4052BCF (INPUT SELCST)
IC4302 LM833M (OP AMP)
IC4303 BU4052BCF (INPUT SELCST)
IC4271 UPC4574G2-T1 (OP AMP)
FL4271 VLFS0014
FL4272 VLFS0014
D4281 MA111
D4282 MA111
D4283 MA111
D4284 MA111
D4285 MA4051-M (5.1V)
TO FM TRANSMITTER C.B.A. P4801
PIN
ANTENNA 1
GND 2
TUNING CONTROL 3
FM TRANSMITTER CS(H) 4
FM TRANSMITTER ON(L) 5
SERIAL CLOCK 6
SERIAL DATA 0 7
GND 8
SW+5V 9
AUDIO(L-R) 10
AUDIO(L+R) 11
SW+12V 12
TO TV/VCR MAIN C.B.A. P4207
TO TV/VCR MAIN C.B.A. P4206
TO TV/VCR MAIN C.B.A. P4205
TO TV/VCR MAIN C.B.A. P4204
TO TV/VCR MAIN C.B.A. P4203
TO TV/VCR MAIN C.B.A. P4202
TO TV/VCR MAIN C.B.A. P4201
GND
AUDIO L CH
AUDIO R CH
AUDIO -5V
ANTENNA
TUNING CONTROL
FM TRANSMITTER CS(H)
FM TRANSMITTER ON(L)
SERIAL CLOCK
SERIAL DATA 0
FM MONO(H)
FM STEREO(L)
TUNER AUDIO 2
MONO(H)/STELEO(L)
MTS(H)/SAP(H)
AUDIO 2 DEFEAT(H)
SAP SIGNAL(L)
MTS SIGNAL(L)
SW+9V
MTS SIGNAL(L)
AUDIO 1 DEFEAT(H)
TUNER AUDIO 1
SW+5V
TUNER 1(L)
FM RADIO(H)
SW+12V
OUTPUT SELECT A
OUTPUT SELECT B
NORMAL AUDIO
NORMAL AUDIO
AUDIO MUTE(H)
REC AUDIO
PB AUDIO
PB Hi-Fi AUDIO(H)
Hi-Fi HEAD SW
I2C SERIAL DATA
I2C SERIAL CLOCK
TP4201
TP4202
TP4205
TP4206
TP4207
TP4208
TP9001
TP9002
TP9003
TP9101
TP9102
TP9103
TP9201
J4273
J4274
J4275
J4276
J4301
J9001
J9002
J9201

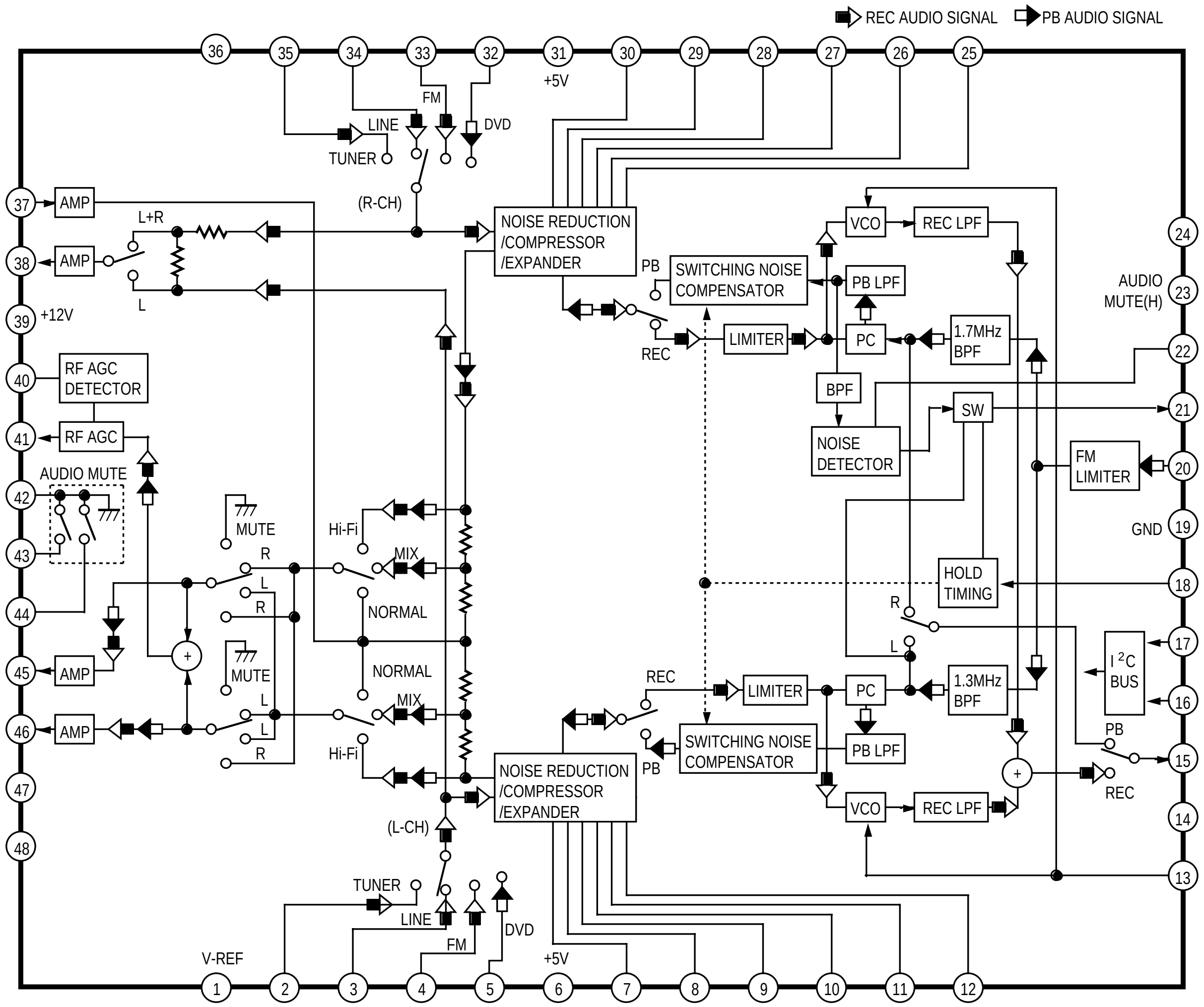
UNLESS OTHERWISE SPECIFIED;
WATTAGE OF RESISTORS IS 1/10W.

VJBS4034

IC9001 MTS/SAP AUDIO PROCESS IC-DETAIL BLOCK DIAGRAM, CXA2064M


REC AUDIO SIGNAL
VARIABLE DE-EMPH.
MATRIX
MODE DISPLAY
RMS DET.
VCA
SAP
MTS
AMP
DE-EMPH.
HPF
RMS DET.
SAP INDICATOR
LPF
LPF
DEMODULATOR
LPF
SAP DET.
BPF
PILOT CANCEL
NOISE DET.
LPF
LPF
IREF
MTS/SAP DET.
PLL
LPF
VCC
GND
30
29
28
27
26
25
24
23
22
21
20
19
18
17
16
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

IC4201 Hi-Fi AUDIO PROCESS IC-BLOCK DIAGRAM, AN3962FB-V


REC AUDIO SIGNAL
PB AUDIO SIGNAL
36
35
34
33
32
31
30
29
28
27
26
25
+5V
FM
LINE
DVD
TUNER
(R-CH)
AMP
L+R
AMP
L
+12V
NOISE REDUCTION /COMPRESSOR /EXPANDER
PB
SWITCHING NOISE COMPENSATOR
VCO
REC LPF
PB LPF
REC
LIMITER
PC
1.7MHz BPF
BPF
NOISE DETECTOR
SW
FM LIMITER
AUDIO MUTE(H)
GND
RF AGC DETECTOR
RF AGC
AUDIO MUTE
MUTE
Hi-Fi
R
MIX
L
NORMAL
R
HOLD TIMING
R
L
I²C BUS
AMP
AMP
MUTE
NORMAL
L
MIX
R
L
R
Hi-Fi
REC
LIMITER
PC
1.3MHz BPF
NOISE REDUCTION /COMPRESSOR /EXPANDER
PB
SWITCHING NOISE COMPENSATOR
PB LPF
VCO
REC LPF
PB
REC
(L-CH)
TUNER
LINE
FM
DVD
V-REF
+5V
37
38
39
40
41
42
43
44
45
46
47
48
24
23
22
21
20
19
18
17
16
15
14
13
1
2
3
4
5
6
7
8
9
10
11
12

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

NOTE:
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IMPORTANT SAFETY NOTICE:
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SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,
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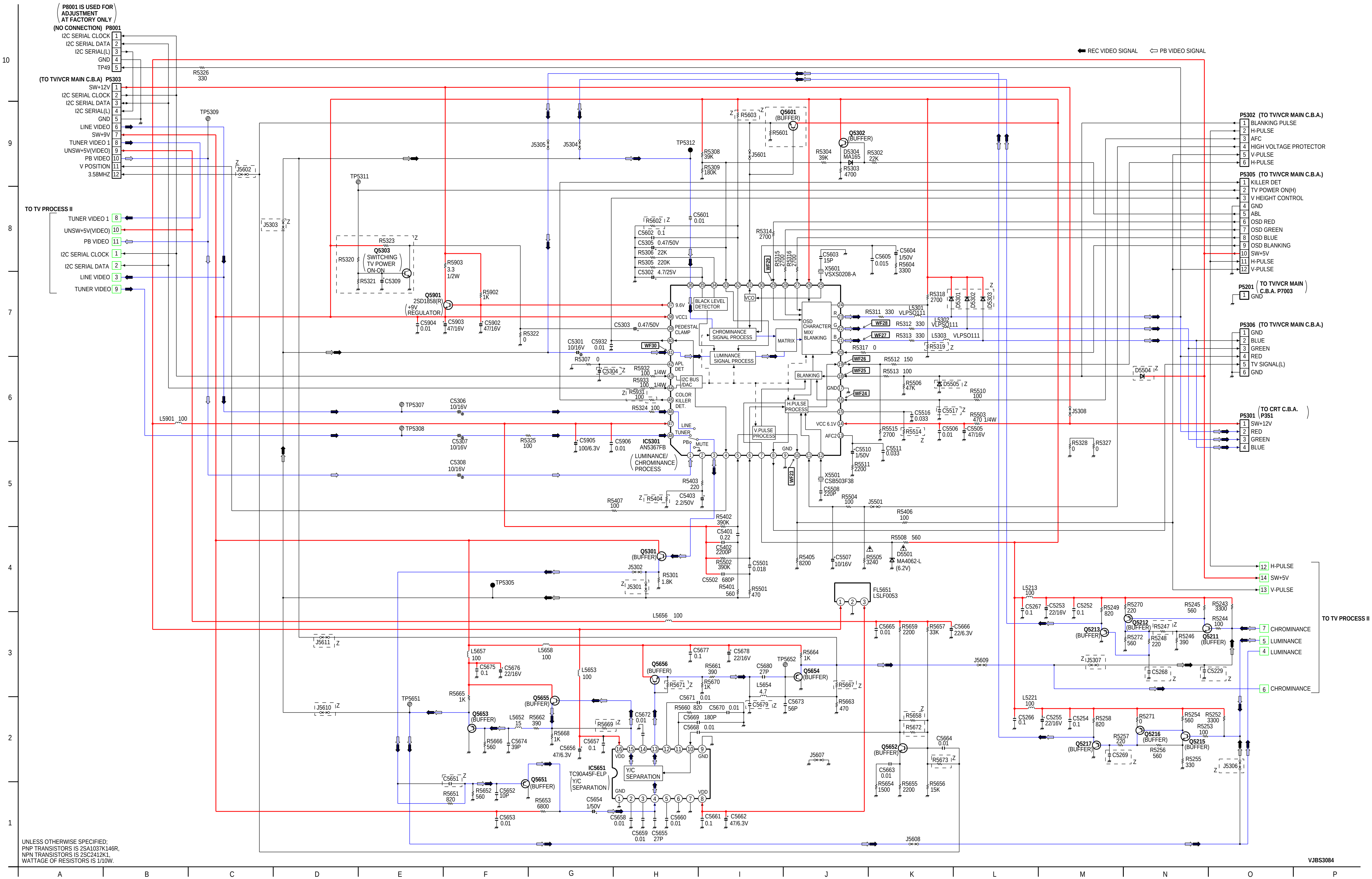
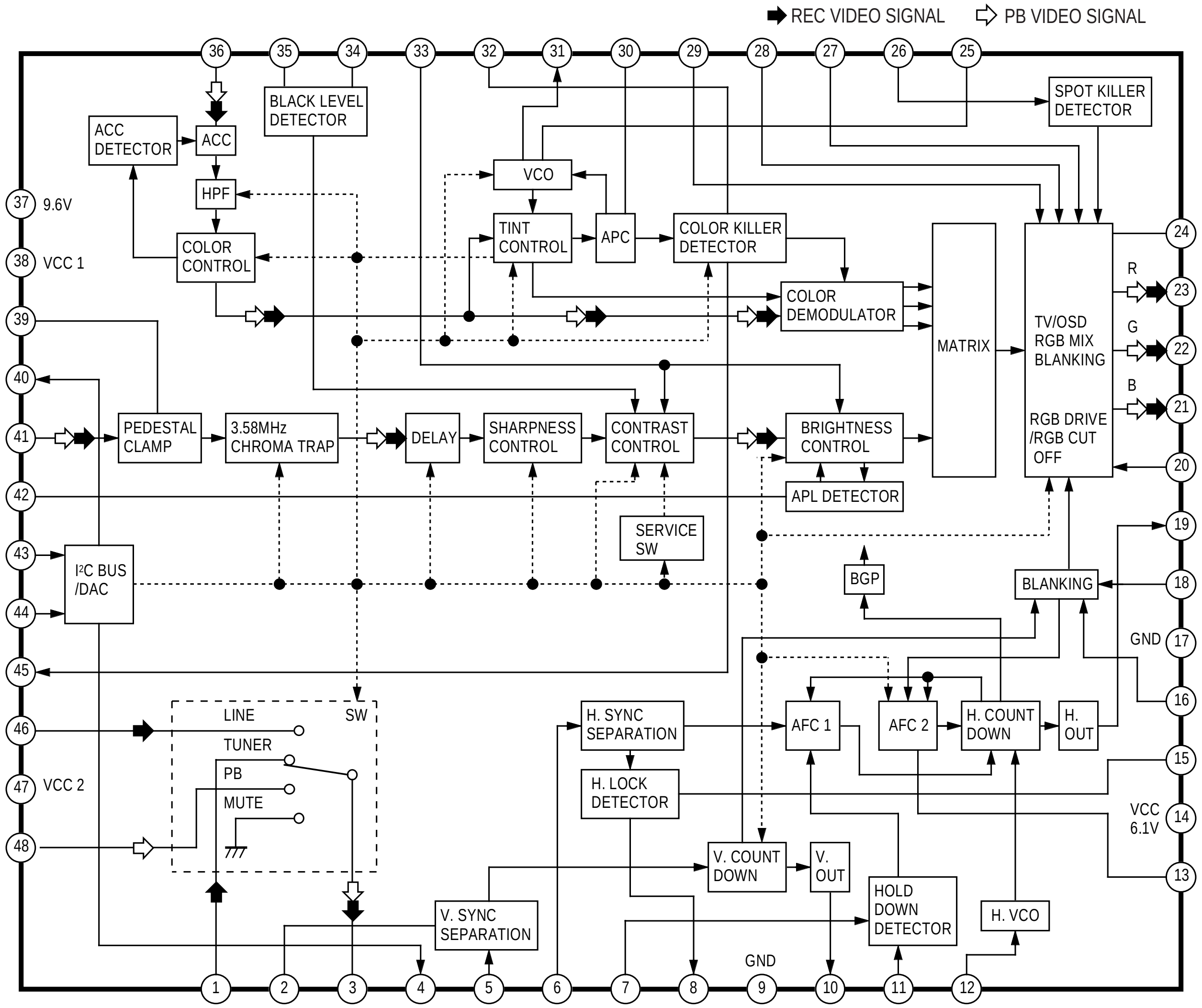


P8001 IS USED FOR ADJUSTMENT AT FACTORY ONLY
(NO CONNECTION) P8001
I2C SERIAL CLOCK 1
I2C SERIAL DATA 2
I2C SERIAL(L) 3
GND 4
TP49 5
(TO TV/VCR MAIN C.B.A) P5303
SW+12V 1
I2C SERIAL CLOCK 2
I2C SERIAL DATA 3
I2C SERIAL(L) 4
GND 5
LINE VIDEO 6
SW+9V 7
TUNER VIDEO 1 8
UNSW+5V(VIDEO) 9
PB VIDEO 10
V POSITION 11
3.58MHZ 12
TO TV PROCESS II
TUNER VIDEO 1 8
UNSW+5V(VIDEO) 10
PB VIDEO 11
I2C SERIAL CLOCK 1
I2C SERIAL DATA 2
LINE VIDEO 3
TUNER VIDEO 9
REC VIDEO SIGNAL
PB VIDEO SIGNAL
P5302 (TO TV/VCR MAIN C.B.A.)
1 BLANKING PULSE
2 H-PULSE
3 AFC
4 HIGH VOLTAGE PROTECTOR
5 V-PULSE
6 H-PULSE
P5305 (TO TV/VCR MAIN C.B.A.)
1 KILLER DET
2 TV POWER ON(H)
3 V HEIGHT CONTROL
4 GND
5 ABL
6 OSD RED
7 OSD GREEN
8 OSD BLUE
9 OSD BLANKING
10 SW+5V
11 H-PULSE
12 V-PULSE
P5201 (TO TV/VCR MAIN C.B.A. P7003) 1 GND
P5306 (TO TV/VCR MAIN C.B.A.)
1 GND
2 BLUE
3 GREEN
4 RED
5 TV SIGNAL(L)
6 GND
P5301 (TO CRT C.B.A. P351)
1 SW+12V
2 RED
3 GREEN
4 BLUE
12 H-PULSE
14 SW+5V
13 V-PULSE
TO TV PROCESS II
7 CHROMINANCE
5 LUMINANCE
4 LUMINANCE
6 CHROMINANCE
IC5301 AN5367FB (LUMINANCE/ CHROMINANCE PROCESS)
BLACK LEVEL DETECTOR
VCO
OSD CHARACTER MIX/ BLANKING
CHROMINANCE SIGNAL PROCESS
LUMINANCE SIGNAL PROCESS
MATRIX
PEDESTAL CLAMP
APL DET
I2C BUS /DAC
COLOR KILLER DET.
BLANKING
H.PULSE PROCESS
V.PULSE PROCESS
LINE TUNER PBo MUTE
VCC 9.6V
VCC1
VCC 6.1V
AFC2
GND
Q5901 2SD1858(R) (+9V REGULATOR)
Q5303 SWITCHING TV POWER ON-ON
Q5601 (BUFFER)
Q5302 (BUFFER)
Q5301 (BUFFER)
D5304 MA165
D5501 MA4062-L (6.2V)
X5601 VSXS0208-A
X5501 CSB503F38
FL5651 LSLF0053
IC5651 TC90A45F-ELP (Y/C SEPARATION)
Y/C SEPARATION
VDD
GND
Q5651 (BUFFER)
Q5652 (BUFFER)
Q5653 (BUFFER)
Q5654 (BUFFER)
Q5655 (BUFFER)
Q5656 (BUFFER)
Q5211 (BUFFER)
Q5212 (BUFFER)
Q5213 (BUFFER)
Q5215 (BUFFER)
Q5216 (BUFFER)
Q5217 (BUFFER)
WF23
WF24
WF25
WF26
WF27
WF28
WF29
WF30
TP5305
TP5307
TP5308
TP5309
TP5311
TP5312
TP5651
TP5652
L5901 100
L5301 VLPSO111
L5302 VLPSO111
L5303 VLPSO111

UNLESS OTHERWISE SPECIFIED:
PNP TRANSISTORS IS 2SA1037K146R,
NPN TRANSISTORS IS 2SC2412K1,
WATTAGE OF RESISTORS IS 1/10W.

VJBS3084

IC5301 LUMINANCE/CHROMINANCE PROCESS
IC-DETAIL BLOCK DIAGRAM, AN5367FB


REC VIDEO SIGNAL
PB VIDEO SIGNAL
ACC DETECTOR
ACC
HPF
COLOR CONTROL
BLACK LEVEL DETECTOR
VCO
TINT CONTROL
APC
COLOR KILLER DETECTOR
COLOR DEMODULATOR
SPOT KILLER DETECTOR
MATRIX
TV/OSD RGB MIX BLANKING
RGB DRIVE /RGB CUT OFF
R
G
B
PEDESTAL CLAMP
3.58MHz CHROMA TRAP
DELAY
SHARPNESS CONTROL
CONTRAST CONTROL
BRIGHTNESS CONTROL
APL DETECTOR
SERVICE SW
BGP
BLANKING
I²C BUS /DAC
LINE
SW
TUNER
PB
MUTE
H. SYNC SEPARATION
H. LOCK DETECTOR
AFC 1
AFC 2
H. COUNT DOWN
H. OUT
V. COUNT DOWN
V. OUT
HOLD DOWN DETECTOR
H. VCO
V. SYNC SEPARATION
9.6V
VCC 1
VCC 2
GND
VCC 6.1V
GND
1
2
3
4
5
6
7
8
9
10
11
12
13
14
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48

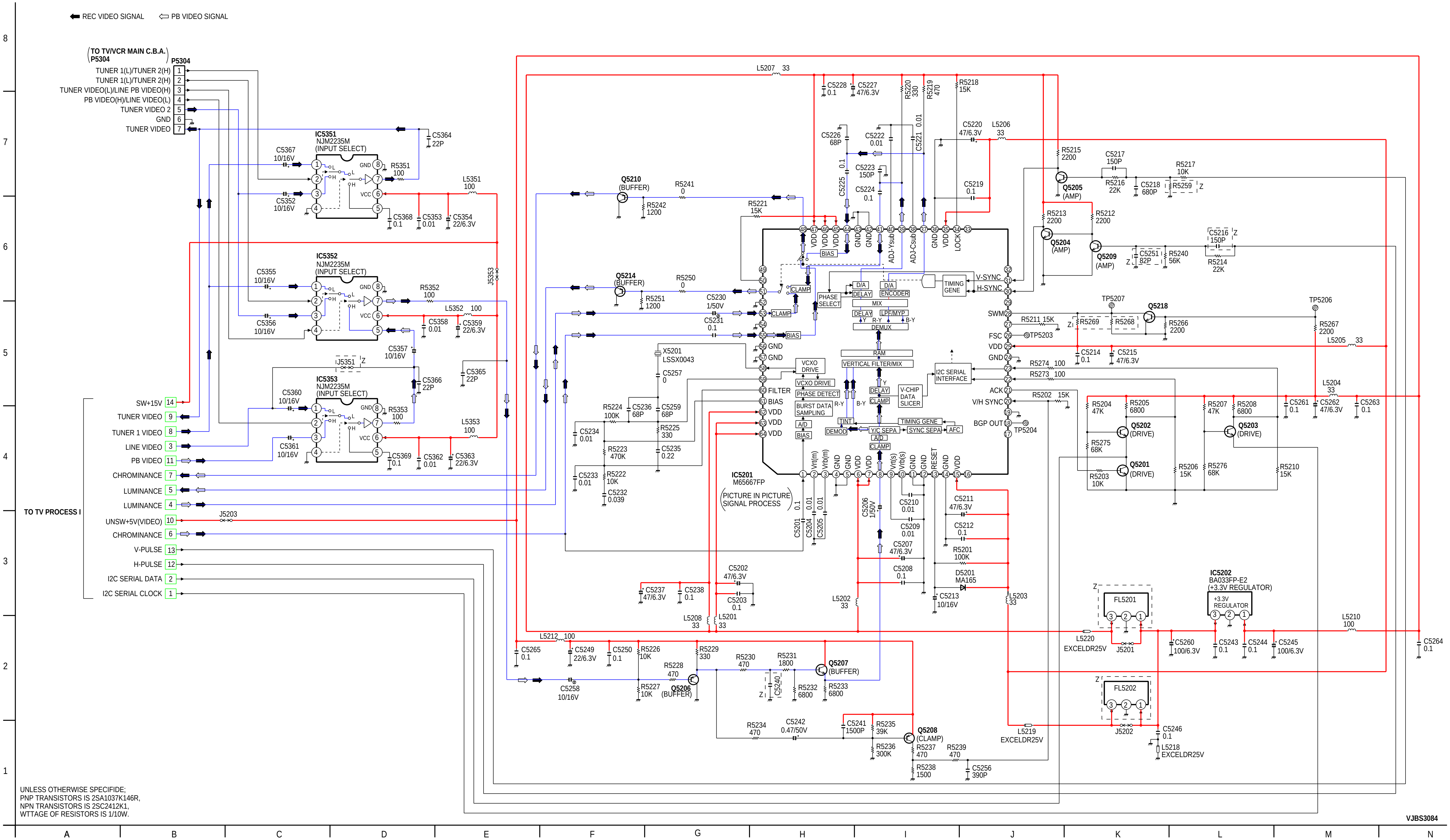
THE FOLLOWING CONTROL FUNCTIONS ARE ADJUSTED BY USING I2C BUS.

SUB COLOR
SUB TINT
SUB BRIGHT
R CUT-OFF
G CUT-OFF
B CUT-OFF
G DRIVE
B DRIVE
SUB CONTRAST
H CENTER
V SIZE
V POSITION

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN ⚠ HAVE
SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,
USE ONLY THE SPECIFIED PARTS.

NOTE:
PARTS ENCLOSED IN DASHED LINES MARKED "Z" ARE NOT USED.


REC VIDEO SIGNAL
PB VIDEO SIGNAL
TO TV/VCR MAIN C.B.A. P5304
P5304
TUNER 1(L)/TUNER 2(H)
TUNER 1(L)/TUNER 2(H)
TUNER VIDEO(L)/LINE PB VIDEO(H)
PB VIDEO(H)/LINE VIDEO(L)
TUNER VIDEO 2
GND
TUNER VIDEO
IC5351 NJM2235M (INPUT SELECT)
IC5352 NJM2235M (INPUT SELECT)
IC5353 NJM2235M (INPUT SELECT)
Q5210 (BUFFER)
Q5214 (BUFFER)
Q5205 (AMP)
Q5204 (AMP)
Q5209 (AMP)
Q5218
Q5202 (DRIVE)
Q5203 (DRIVE)
Q5201 (DRIVE)
Q5207 (BUFFER)
Q5206 (BUFFER)
Q5208 (CLAMP)
IC5201 M65667FP
(PICTURE IN PICTURE SIGNAL PROCESS)
IC5202 BA033FP-E2 (+3.3V REGULATOR)
+3.3V REGULATOR
FL5201
FL5202
X5201 LSSX0043
D5201 MA165
L5219 EXCELDR25V
L5220 EXCELDR25V
L5218 EXCELDR25V
TP5204
TP5206
TP5207
TP5203
VCXO DRIVE
PHASE DETECT
BURST DATA SAMPLING
A/D
BIAS
DEMOD
TINT
Y/C SEPA
SYNC SEPA
AFC
TIMING GENE
V-CHIP DATA SLICER
I2C SERIAL INTERFACE
VERTICAL FILTER/MIX
RAM
DEMUX
LPF/MYP
MIX
DELAY
D/A
ENCODER
PHASE SELECT
CLAMP
TIMING GENE
V-SYNC
H-SYNC
SWM
FSC
VDD
GND
ACK
V/H SYNC
BGP OUT
FILTER
ADJ-Ysub
ADJ-Csub
LOCK
RESET
TO TV PROCESS I
SW+15V
TUNER VIDEO
TUNER 1 VIDEO
LINE VIDEO
PB VIDEO
CHROMINANCE
LUMINANCE
LUMINANCE
UNSW+5V(VIDEO)
CHROMINANCE
V-PULSE
H-PULSE
I2C SERIAL DATA
I2C SERIAL CLOCK
J5201
J5202
J5203
J5351
J5353
A
B
C
D
E
F
G
H
I
J
K
L
M
N
1
2
3
4
5
6
7
8

UNLESS OTHERWISE SPECIFIDE;
PNP TRANSISTORS IS 2SA1037K146R,
NPN TRANSISTORS IS 2SC2412K1,
WTTAGE OF RESISTORS IS 1/10W.

VJBS3084

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

NOTE:
PARTS ENCLOSED IN DASHED LINES MARKED "Z" ARE NOT USED.

IMPORTANT SAFETY NOTICE:
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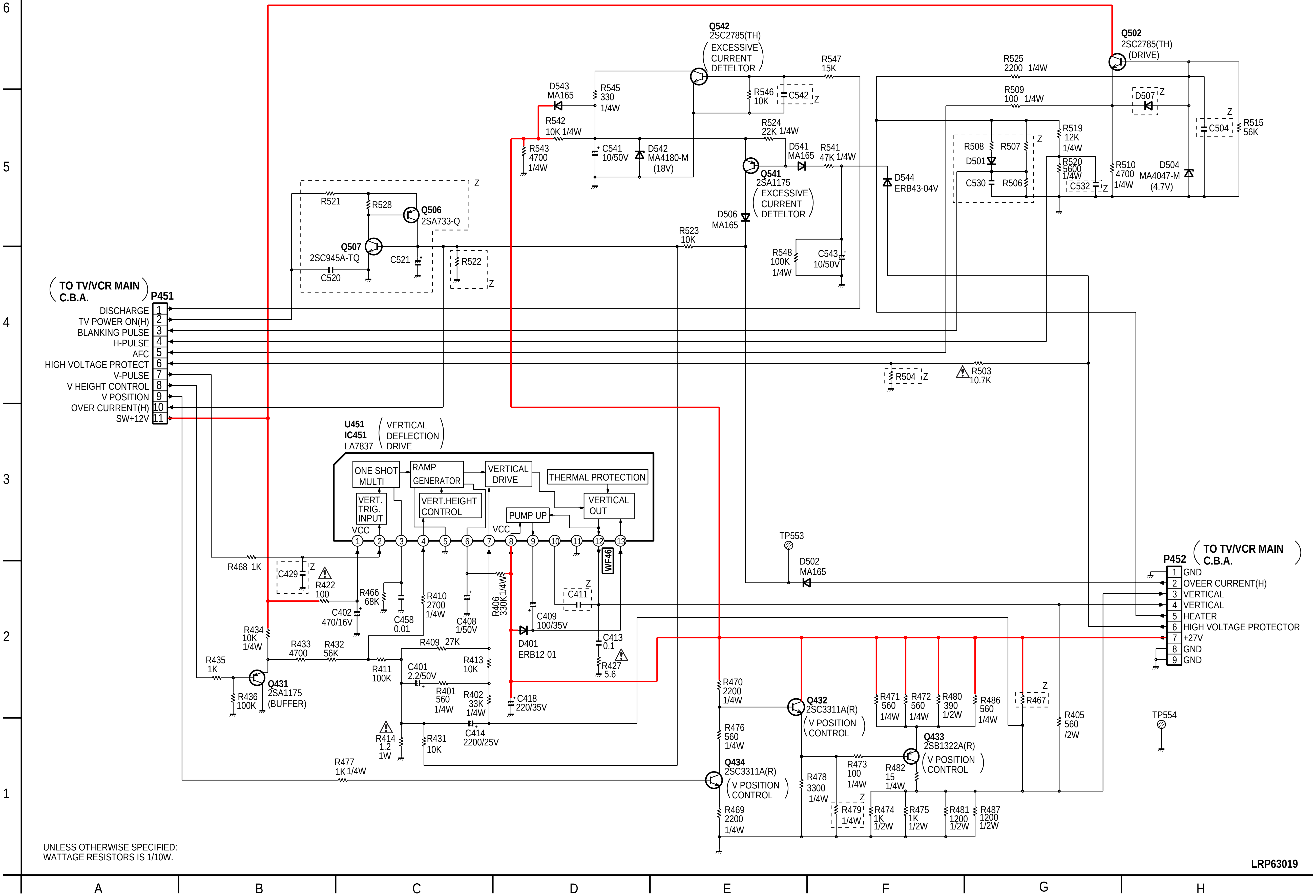

6
5
4
3
2
1
A
B
C
D
E
F
G
H
TO TV/VCR MAIN C.B.A.
P451
DISCHARGE 1
TV POWER ON(H) 2
BLANKING PULSE 3
H-PULSE 4
AFC 5
HIGH VOLTAGE PROTECT 6
V-PULSE 7
V HEIGHT CONTROL 8
V POSITION 9
OVER CURRENT(H) 10
SW+12V 11
Q542 2SC2785(TH) EXCESSIVE CURRENT DETELTOR
Q502 2SC2785(TH) (DRIVE)
Q541 2SA1175 EXCESSIVE CURRENT DETELTOR
Q506 2SA733-Q
Q507 2SC945A-TQ
D543 MA165
R545 330 1/4W
R542 10K 1/4W
R543 4700 1/4W
C541 10/50V
D542 MA4180-M (18V)
R546 10K
C542 Z
R547 15K
R524 22K 1/4W
D541 MA165
R541 47K 1/4W
D506 MA165
R523 10K
R548 100K 1/4W
C543 10/50V
R521
R528
C521
C520
R522 Z
Z
R525 2200 1/4W
R509 100 1/4W
D507 Z
C504 Z
R515 56K
R519 12K 1/4W
R508
R507
D501
Z
C530
R506
R520 5600 1/4W
C532 Z
R510 4700 1/4W
D504 MA4047-M (4.7V)
D544 ERB43-04V
R504 Z
⚠ R503 10.7K
U451 IC451 LA7837 VERTICAL DEFLECTION DRIVE
ONE SHOT MULTI
RAMP GENERATOR
VERTICAL DRIVE
THERMAL PROTECTION
VERT. TRIG. INPUT
VERT.HEIGHT CONTROL
PUMP UP
VERTICAL OUT
VCC
VCC
1 2 3 4 5 6 7 8 9 10 11 12 13
WF46
R468 1K
C429 Z
⚠ R422 100
R466 68K
C458 0.01
R410 2700 1/4W
C408 1/50V
R406 330K 1/4W
C409 100/35V
C411 Z
D401 ERB12-01
C413 0.1
⚠ R427 5.6
C402 470/16V
R434 10K 1/4W
R433 4700
R432 56K
R435 1K
Q431 2SA1175 (BUFFER)
R436 100K
R411 100K
R409 27K
R413 10K
C401 2.2/50V
R401 560 1/4W
R402 33K 1/4W
C414 2200/25V
C418 220/35V
⚠ R414 1.2 1W
R431 10K
R477 1K 1/4W
TP553
D502 MA165
TO TV/VCR MAIN C.B.A.
P452
1 GND
2 OVEER CURRENT(H)
3 VERTICAL
4 VERTICAL
5 HEATER
6 HIGH VOLTAGE PROTECTOR
7 +27V
8 GND
9 GND
R470 2200 1/4W
R476 560 1/4W
Q434 2SC3311A(R) (V POSITION CONTROL)
R469 2200 1/4W
Q432 2SC3311A(R) (V POSITION CONTROL)
R471 560 1/4W
R472 560 1/4W
R480 390 1/2W
R486 560 1/4W
R467 Z
R405 560 /2W
TP554
Q433 2SB1322A(R) (V POSITION CONTROL)
R478 3300 1/4W
R473 100 1/4W
R482 15 1/4W
R479 1/4W Z
R474 1K 1/2W
R475 1K 1/2W
R481 1200 1/2W
R487 1200 1/2W

UNLESS OTHERWISE SPECIFIED:
WATTAGE RESISTORS IS 1/10W.

LRP63019

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES, REFER TO BEGINNING OF SCHEMATIC SECTION.

NOTE:
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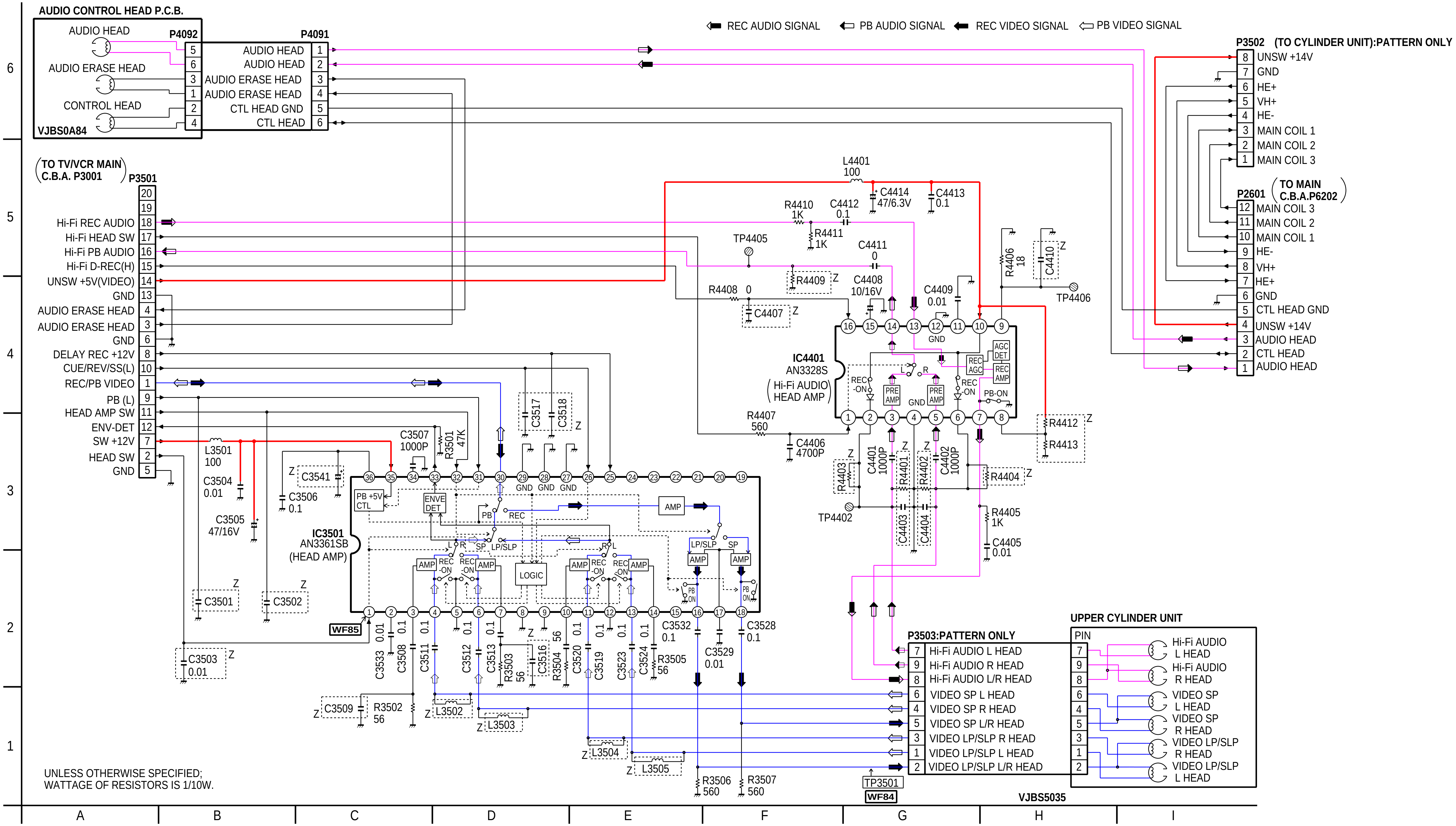


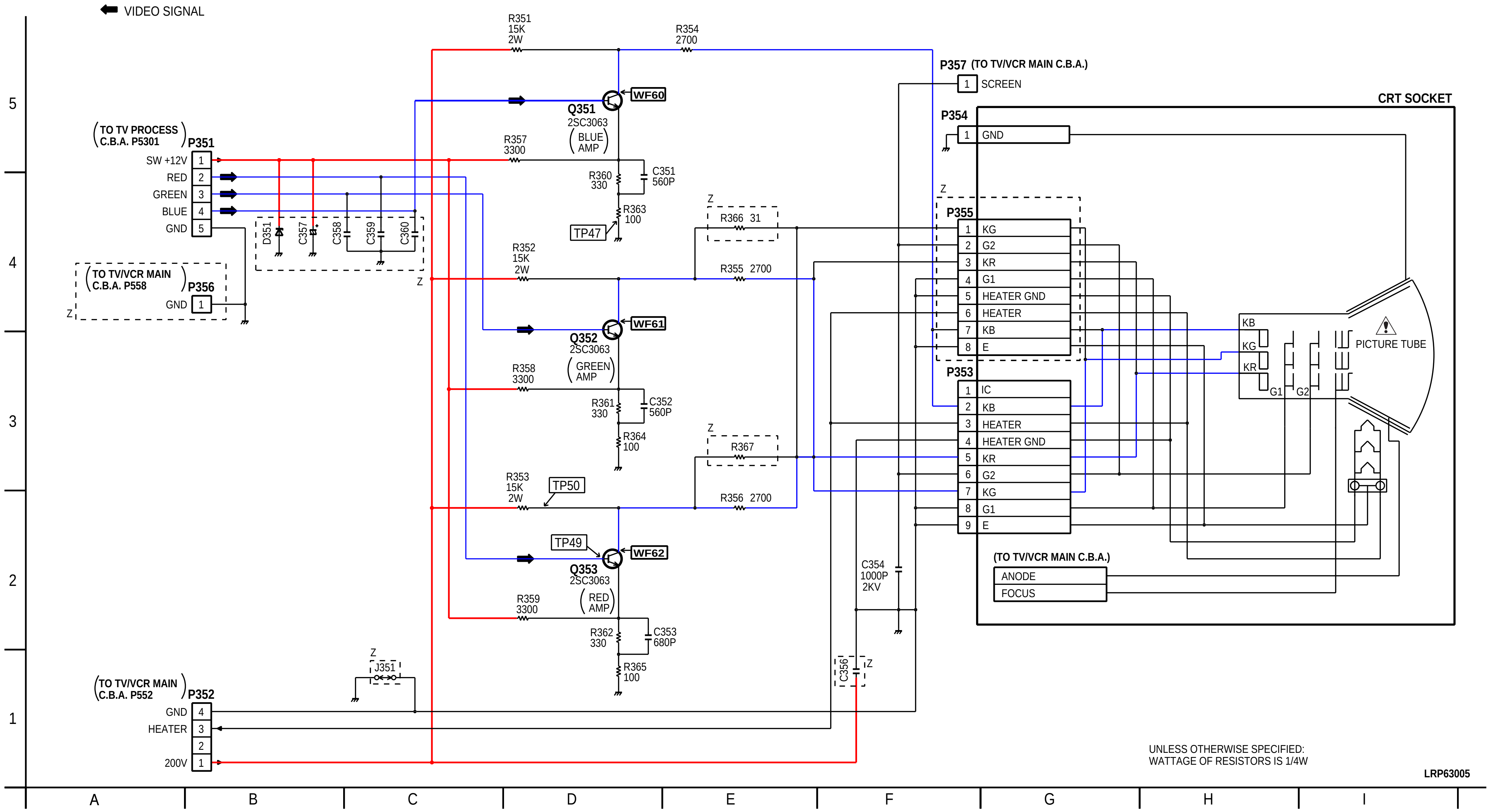
AUDIO CONTROL HEAD P.C.B.
AUDIO HEAD
AUDIO ERASE HEAD
CONTROL HEAD
VJBS0A84
P4092
P4091
5 AUDIO HEAD 1
6 AUDIO HEAD 2
3 AUDIO ERASE HEAD 3
1 AUDIO ERASE HEAD 4
2 CTL HEAD GND 5
4 CTL HEAD 6
REC AUDIO SIGNAL
PB AUDIO SIGNAL
REC VIDEO SIGNAL
PB VIDEO SIGNAL
P3502 (TO CYLINDER UNIT):PATTERN ONLY
8 UNSW +14V
7 GND
6 HE+
5 VH+
4 HE-
3 MAIN COIL 1
2 MAIN COIL 2
1 MAIN COIL 3
P2601 (TO MAIN C.B.A.P6202)
12 MAIN COIL 3
11 MAIN COIL 2
10 MAIN COIL 1
9 HE-
8 VH+
7 HE+
6 GND
5 CTL HEAD GND
4 UNSW +14V
3 AUDIO HEAD
2 CTL HEAD
1 AUDIO HEAD
(TO TV/VCR MAIN C.B.A. P3001)
P3501
20
19
Hi-Fi REC AUDIO 18
Hi-Fi HEAD SW 17
Hi-Fi PB AUDIO 16
Hi-Fi D-REC(H) 15
UNSW +5V(VIDEO) 14
GND 13
AUDIO ERASE HEAD 4
AUDIO ERASE HEAD 3
GND 6
DELAY REC +12V 8
CUE/REV/SS(L) 10
REC/PB VIDEO 1
PB (L) 9
HEAD AMP SW 11
ENV-DET 12
SW +12V 7
HEAD SW 2
GND 5
L4401 100
R4410 1K
C4412 0.1
C4414 47/6.3V
C4413 0.1
R4411 1K
TP4405
C4411 0
R4409 Z
R4408 0
C4407 Z
C4408 10/16V
C4409 0.01
R4406 18
C4410 Z
TP4406
IC4401
AN3328S
(Hi-Fi AUDIO HEAD AMP)
GND
AGC DET
REC AGC
REC AMP
REC -ON
PRE AMP
PB-ON
L R
R4407 560
C4406 4700P
R4412 Z
R4413
R4403 Z
C4401 1000P
R4401 Z
R4402 Z
C4402 1000P
R4404 Z
TP4402
C4403 Z
C4404 Z
R4405 1K
C4405 0.01
L3501 100
C3504 0.01
C3505 47/16V
C3541 Z
C3506 0.1
C3507 1000P
R3501 47K
C3517
C3518 Z
PB +5V CTL
ENVE DET
PB REC
AMP
LP/SLP SP
LOGIC
IC3501
AN3361SB
(HEAD AMP)
GND GND GND
PB ON
C3501 Z
C3502 Z
C3503 0.01 Z
WF85
C3533 0.01
C3508 0.1
C3511 0.1
C3512 0.1
C3513 0.1
R3503 56
C3516 Z
R3504 56
C3520 0.1
C3519 0.1
C3523 0.1
C3524 0.1
R3505 56
C3532 0.1
C3529 0.01
C3528 0.1
C3509 Z
R3502 56
L3502 Z
L3503 Z
L3504 Z
L3505 Z
R3506 560
R3507 560
TP3501
WF84
P3503:PATTERN ONLY
7 Hi-Fi AUDIO L HEAD
9 Hi-Fi AUDIO R HEAD
8 Hi-Fi AUDIO L/R HEAD
6 VIDEO SP L HEAD
4 VIDEO SP R HEAD
5 VIDEO SP L/R HEAD
3 VIDEO LP/SLP R HEAD
1 VIDEO LP/SLP L HEAD
2 VIDEO LP/SLP L/R HEAD
UPPER CYLINDER UNIT
PIN
Hi-Fi AUDIO L HEAD
Hi-Fi AUDIO R HEAD
VIDEO SP L HEAD
VIDEO SP R HEAD
VIDEO LP/SLP R HEAD
VIDEO LP/SLP L HEAD
VJBS5035
A B C D E F G H I
1 2 3 4 5 6

UNLESS OTHERWISE SPECIFIED;
WATTAGE OF RESISTORS IS 1/10W.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN ⚠ HAVE
SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,
USE ONLY THE SPECIFIED PARTS.

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

NOTE:
PARTS ENCLOSED IN DASHED LINES MARKED "Z" ARE NOT USED.



VIDEO SIGNAL
R351 15K 2W
R354 2700
P357 (TO TV/VCR MAIN C.B.A.)
1 SCREEN
CRT SOCKET
P354
1 GND
Q351 2SC3063 (BLUE AMP)
WF60
(TO TV PROCESS C.B.A. P5301)
P351
SW +12V 1
RED 2
GREEN 3
BLUE 4
GND 5
R357 3300
R360 330
C351 560P
R363 100
TP47
D351
C357
C358
C359
C360
Z
R366 31
R352 15K 2W
R355 2700
(TO TV/VCR MAIN C.B.A. P558)
P356
GND 1
P355
1 KG
2 G2
3 KR
4 G1
5 HEATER GND
6 HEATER
7 KB
8 E
Q352 2SC3063 (GREEN AMP)
WF61
R358 3300
R361 330
C352 560P
R364 100
R367
P353
1 IC
2 KB
3 HEATER
4 HEATER GND
5 KR
6 G2
7 KG
8 G1
9 E
KB
KG
KR
G1
G2
PICTURE TUBE
R353 15K 2W
TP50
R356 2700
TP49
Q353 2SC3063 (RED AMP)
WF62
R359 3300
R362 330
C353 680P
R365 100
C354 1000P 2KV
(TO TV/VCR MAIN C.B.A.)
ANODE
FOCUS
J351
C356
(TO TV/VCR MAIN C.B.A. P552)
P352
GND 4
HEATER 3
2
200V 1
1
2
3
4
5
A
B
C
D
E
F
G
H
I

UNLESS OTHERWISE SPECIFIED:
WATTAGE OF RESISTORS IS 1/4W

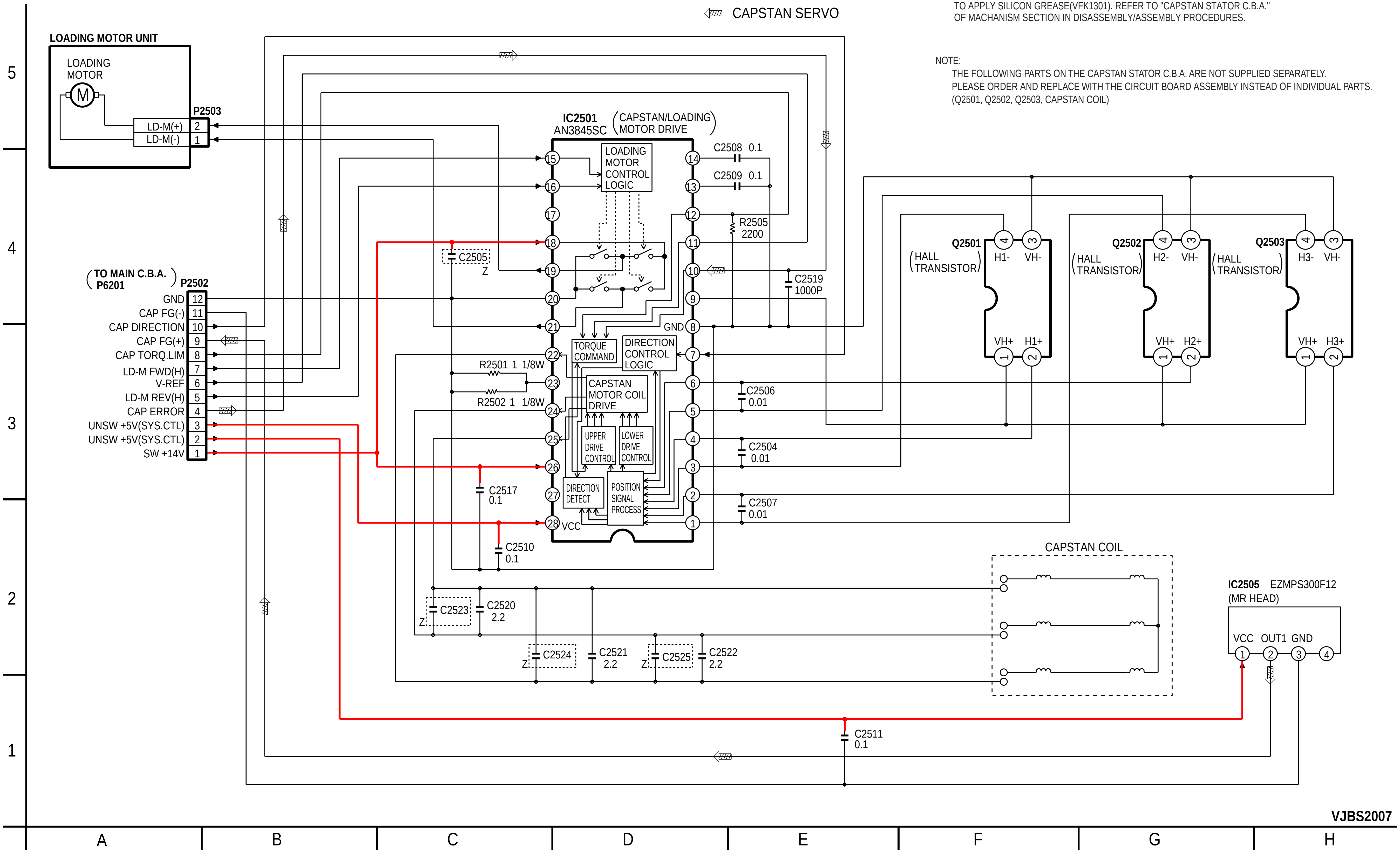
LRP63005

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

NOTE:
PARTS ENCLOSED IN DASHED LINES MARKED "Z" ARE NOT USED.

NOTE:
WHEN INSTALLING THE IC2501(AN3845SC) OR CAPSTAN STATOR C.B.A., BE SURE
TO APPLY SILICON GREASE(VFK1301). REFER TO "CAPSTAN STATOR C.B.A."
OF MACHANISM SECTION IN DISASSEMBLY/ASSEMBLY PROCEDURES.

NOTE:
THE FOLLOWING PARTS ON THE CAPSTAN STATOR C.B.A. ARE NOT SUPPLIED SEPARATELY.
PLEASE ORDER AND REPLACE WITH THE CIRCUIT BOARD ASSEMBLY INSTEAD OF INDIVIDUAL PARTS.
(Q2501, Q2502, Q2503, CAPSTAN COIL)


CAPSTAN SERVO
LOADING MOTOR UNIT
LOADING MOTOR
M
P2503
LD-M(+) 2
LD-M(-) 1
IC2501 AN3845SC
(CAPSTAN/LOADING MOTOR DRIVE)
LOADING MOTOR CONTROL LOGIC
TORQUE COMMAND
DIRECTION CONTROL LOGIC
CAPSTAN MOTOR COIL DRIVE
UPPER DRIVE CONTROL
LOWER DRIVE CONTROL
DIRECTION DETECT
POSITION SIGNAL PROCESS
GND
VCC
C2508 0.1
C2509 0.1
R2505 2200
C2519 1000P
C2505 Z
R2501 1 1/8W
R2502 1 1/8W
C2506 0.01
C2504 0.01
C2507 0.01
C2517 0.1
C2510 0.1
(TO MAIN C.B.A. P6201)
P2502
GND 12
CAP FG(-) 11
CAP DIRECTION 10
CAP FG(+) 9
CAP TORQ.LIM 8
LD-M FWD(H) 7
V-REF 6
LD-M REV(H) 5
CAP ERROR 4
UNSW +5V(SYS.CTL) 3
UNSW +5V(SYS.CTL) 2
SW +14V 1
Q2501 (HALL TRANSISTOR) H1- VH- VH+ H1+
Q2502 (HALL TRANSISTOR) H2- VH- VH+ H2+
Q2503 (HALL TRANSISTOR) H3- VH- VH+ H3+
CAPSTAN COIL
IC2505 EZMPS300F12 (MR HEAD)
VCC OUT1 GND
C2523 Z
C2520 2.2
C2524 Z
C2521 2.2
C2525 Z
C2522 2.2
C2511 0.1
5 4 3 2 1
A B C D E F G H
VJBS2007

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USE ONLY THE SPECIFIED PARTS.

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

NOTE:
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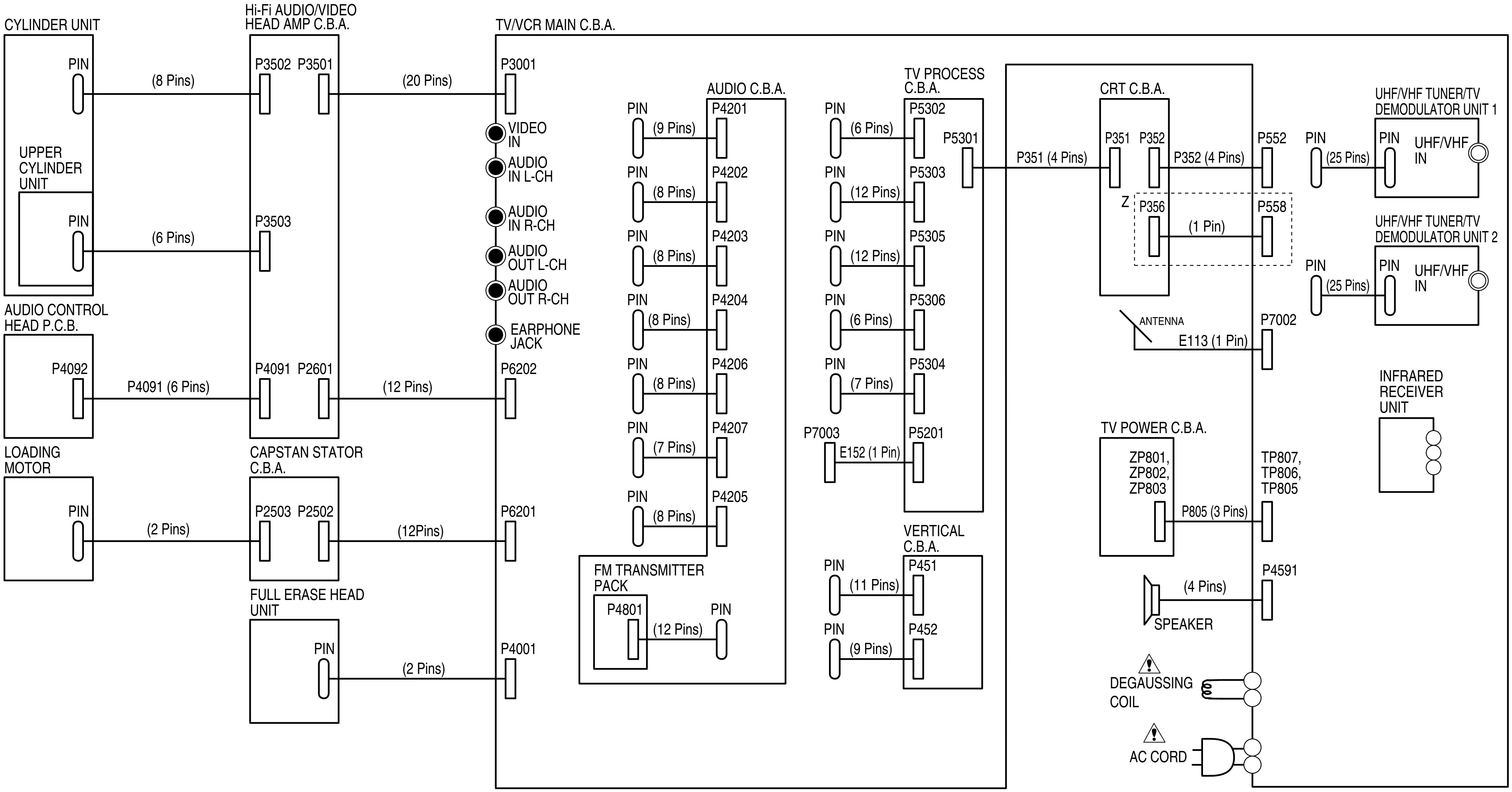

CYLINDER UNIT
PIN
(8 Pins)
UPPER CYLINDER UNIT
PIN
(6 Pins)
Hi-Fi AUDIO/VIDEO HEAD AMP C.B.A.
P3502
P3501
P3503
(20 Pins)
TV/VCR MAIN C.B.A.
P3001
VIDEO IN
AUDIO IN L-CH
AUDIO IN R-CH
AUDIO OUT L-CH
AUDIO OUT R-CH
EARPHONE JACK
AUDIO CONTROL HEAD P.C.B.
P4092
P4091 (6 Pins)
P4091
P2601
(12 Pins)
P6202
LOADING MOTOR
PIN
(2 Pins)
CAPSTAN STATOR C.B.A.
P2503
P2502
(12Pins)
P6201
FULL ERASE HEAD UNIT
PIN
(2 Pins)
P4001
AUDIO C.B.A.
PIN
(9 Pins)
P4201
PIN
(8 Pins)
P4202
PIN
(8 Pins)
P4203
PIN
(8 Pins)
P4204
PIN
(8 Pins)
P4206
PIN
(7 Pins)
P4207
PIN
(8 Pins)
P4205
FM TRANSMITTER PACK
P4801
(12 Pins)
PIN
TV PROCESS C.B.A.
PIN
(6 Pins)
P5302
P5301
PIN
(12 Pins)
P5303
PIN
(12 Pins)
P5305
PIN
(6 Pins)
P5306
PIN
(7 Pins)
P5304
P7003
E152 (1 Pin)
P5201
VERTICAL C.B.A.
PIN
(11 Pins)
P451
PIN
(9 Pins)
P452
P351 (4 Pins)
CRT C.B.A.
P351
P352
P352 (4 Pins)
P552
Z
P356
(1 Pin)
P558
ANTENNA
E113 (1 Pin)
P7002
UHF/VHF TUNER/TV DEMODULATOR UNIT 1
PIN
(25 Pins)
PIN
UHF/VHF IN
UHF/VHF TUNER/TV DEMODULATOR UNIT 2
PIN
(25 Pins)
PIN
UHF/VHF IN
INFRARED RECEIVER UNIT
TV POWER C.B.A.
ZP801, ZP802, ZP803
P805 (3 Pins)
TP807, TP806, TP805
(4 Pins)
P4591
SPEAKER
⚠
DEGAUSSING COIL
⚠
AC CORD

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

MAIN C.B.A. (POWER SUPPLY/VIDEO/AUDIO SECTION)

MODE PIN NO.	REC	PLAY
IC501		
1	60.9	60.9
2	60.7	60.7
3	0	0
4	12.0	12.0
IC1001		
1	5.2	5.2
2	4.4	4.4
3	0.6	0.6
4	2.1	2.1
IC3001		
1	5.1	5.1
2	3.4	3.4
3	2.1	2.1
4	5.1	5.1
5	2.7	2.7
6	1.9	1.9
7	5.1	5.1
8	5.1	5.1
9	2.2	2.2
10	2.8	2.8
11	0.4	0.9
12	2.8	2.8
13	0	0
14	0.5	0.5
15	1.0	1.1
16	3.1	3.6
17	2.3	1.7
18	2.6	2.6
19	2.6	2.6
20	3.1	3.5
21	5.0	4.9
22	2.0	2.0
23	2.4	2.4
24	2.5	2.4
25	2.0	2.0
26	2.5	2.4
27	2.0	2.0
28	0	0
29	1.9	1.8
30	1.8	1.5
31	2.0	1.9
32	2.3	2.4
33	2.0	2.3
34	2.8	2.7
35	2.0	1.9
36	2.5	2.5
37	0.1	1.5
38	4.5	2.3
39	2.2	1.9
40	3.4	3.0
41	2.8	3.4
42	0	0
43	3.3	3.3
44	2.6	2.6
45	2.6	2.6
46	2.6	2.6
47	5.0	4.9
48	1.2	1.2
49	2.6	2.6
50	3.8	3.1
51	5.0	4.9
52	2.5	2.5
53	2.5	2.5
54	1.9	2.1
55	2.1	2.1
56	5.2	4.4
57	2.6	2.6
58	2.6	2.6
59	2.6	2.6
60	2.6	2.6
61	2.6	2.6
62	0	0
63	0	0
64	1.6	1.8
65	2.6	2.6
66	2.6	2.6
67	2.6	2.7
68	5.2	5.2
69	2.6	2.6
70	0	0
71	2.6	2.6
72	2.6	2.6
73	2.7	2.6
74	0	0
75	0	0
76	3.4	3.3
77	0	0
78	2.2	2.2
79	3.0	3.0
80	2.2	2.2
81	2.6	2.7
82	2.8	2.8
83	2.5	2.5
84	3.8	2.4
IC3101		
1	2.2	2.1
2	4.7	0.3
3	2.5	2.7
4	4.7	4.7
5	0.1	0.1
6	0	5.1
7	1.7	1.5
8	0	0
IC3201		
1	2.5	2.5
2	5.1	5.1
3	0	0
4	2.5	2.5
5	3.0	3.0
6	-2.9	-2.9
7	2.3	2.3
8	2.9	3.0
IC3301		
1	2.4	2.4
2	2.6	2.7
3	5.2	5.2
4	0	0
5	2.2	1.7
6	2.3	2.3
7	5.2	5.2
8	0	0
9	0.1	0.1
10	0.1	0.1
11	0.1	0.1
12	0	0.1
13	5.2	5.2
14	3.6	3.6
15	2.8	2.8
16	0	0
17	5.0	5.0
18	4.2	4.3
19	0.1	0.1
20	0	0.1
21	0	0.1
22	0	0.1
23	0	0
24	0	0
25	0	0.1
26	0	0.1
27	0	0.1
28	0	0.1
29	4.0	4.1
30	0	0
31	0	0
32	0	0.1
33	0	0
34	0	0
35	0	0
36	5.2	5.2
37	0	0
38	5.2	5.2
39	5.2	5.2
40	---	---
41	0.4	5.2
42	0	0
43	4.8	4.8
44	4.3	4.4
45	4.9	4.9
46	3.2	3.2
47	2.0	2.0
48	0	0
IC4501		
1	6.4	6.4
2	0	0
3	6.4	6.4
4	0	0
5	2.4	2.4
6	6.7	6.7
7	6.7	6.7
8	0	0
9	6.8	6.8
10	15.8	15.8
IC4511		
1	6.4	6.4
2	0	0
3	6.4	6.4
4	0	0
5	2.4	2.4
6	6.7	6.7
7	6.7	6.7
8	0	0
9	6.8	6.8
10	15.8	15.8
IC4701		
1	5.8	5.8
2	5.8	5.8
3	5.8	5.8
4	0	0
5	5.8	5.8
6	5.8	5.8
7	5.8	5.8
8	11.6	11.6
IC6501		
1	0	0
2	4.8	4.8
3	5.2	5.2
4	0.1	2.8
5	3.8	3.8
6	0	0
7	5.1	5.2
8	0	0
9	0	0
10	0	0
11	4.8	4.8
12	0	0
13	4.1	4.1
14	0	0
15	0.4	0.4
16	0.4	0.4
17	2.4	2.4
18	3.0	3.0
19	5.1	5.2
20	5.2	5.2
21	5.2	5.2
22	4.6	4.6
23	0.4	0.4
24	0	0.3
25	0.3	0
26	0.7	0.7
27	0.7	0.7
28	3.6	3.6
29	1.3	1.3
30	4.2	4.2
31	4.5	4.5
32	4.7	4.7
33	0	3.9
34	0	0.9
35	4.7	4.7
36	4.7	0
37	0	4.7
38	4.7	4.7
39	4.7	0
40	0	0
41	0	0
42	0	0
Q501		
E	0	0
C	71.2	71.2
B	0.4	0.4
Q551		
E	0	0
C	0	0
B	60.9	60.9
Q571		
E	1.4	1.4
C	10.5	10.5
B	1.8	1.8
Q581		
E	115.2	115.2
C	0	0
B	114.8	114.8
Q801		
E	0	0
C	0.2	0.2
B	0.8	0.8
Q1001		
E	0	0
C	130.0	130.0
B	0.4	0.4
Q1002		
E	0.4	0.4
C	0.4	0.4
B	0.6	0.6
Q1003		
E	-0.6	-0.6
C	4.1	4.1
B	-0.1	-0.1
Q1004		
E	4.4	4.4
C	0	0
B	4.1	4.1
Q1005		
E	5.2	5.2
C	5.2	5.2
B	4.6	4.6
Q1051		
E	12.0	12.0
C	14.2	14.2
B	12.6	12.6
Q1052		
E	0	0
C	12.6	12.6
B	0.6	0.6
Q1053		
E	5.1	5.1
C	5.2	5.2
B	5.8	5.8
Q1057		
E	12.0	12.0
C	12.0	12.0
B	11.5	11.5
Q1058		
E	-31.6	-31.6
C	-31.5	-31.5
B	-30.9	-30.9
Q3001		
E	1.6	1.6
C	0	0
B	1.0	1.0
Q3002		
E	2.8	2.8
C	4.6	4.6
B	3.4	3.4
Q3310		
E	0	0
C	4.2	4.2
B	-0.3	-0.3
Q3311		
E	0	2.4
C	0	0
B	1.7	1.7
Q3314		
E1	1.5	1.5
C1	5.1	5.1
B1	2.1	2.1
E2	1.5	1.5
C2	1.7	1.7
B2	2.1	2.1
Q3315		
E	5.2	5.2
C	5.0	5.0
B	1.7	1.7
Q4001		
E	5.1	5.1
C	-19.6	5.1
B	5.1	4.4
Q4002		
E	-11.3	0
C	0	0
B	-19.8	0.8
Q4003		
E	-14.3	0
C	0	0
B	-19.5	0.8
Q4101		
E	0	0
C	10.9	0.6
B	0.2	0.6
Q4154		
E	0	0
C	0	0
B	5.0	5.0
Q4171		
E	0	0
C	0	0
B	0.1	0.1
Q4173		
E	2.5	2.5
C	0.5	0.5
B	0	
Q7001		
E	2.0	2.0
C	0	0
B	1.3	1.3
Q7101		
E	1.5	1.5
C	0	0
B	0.9	0.9
TP501	0.1	0.1
TP502	60.6	60.6
TP509		
TP551	0.4	0.4
TP552	0.4	0.4
TP556	2.2	2.2
TP558	0.1	0.1
TP559	0	0
TP801	0.1	0.1
TP802	0.1	0.1
TP803	0.1	0.1
TP804	0.1	0.1
TP805	0.1	0.1
TP806	0.1	0.1
TP807	0.1	0.1
TP808	11.8	11.8
TP809	0	0
TP810	0	0
TP1001	0	0
TP1002	39.1	39.1
TP1003	14.2	14.2
TP1004	5.2	5.2
TP1005	12.0	12.0
TP1007	5.2	5.2
TP1008	0	0
TP1054	5.2	5.2
TP3001	1.2	1.2
TP3002	2.7	2.7
TP3003	3.3	3.3
TP3004	1.8	1.8
TP3005	2.5	2.5
TP3006	2.5	2.5
TP3007	2.4	2.4
TP3008	2.3	2.3
TP3009	0	0
TP3010	2.9	2.9
TP3011	2.6	2.6
TP3012	2.9	2.9
TP3301	2.7	2.7
TP3302	2.6	2.6
TP3303	5.0	5.0
TP4001	0.5	0.5
TP4002	0	0
TP4003	0	0
TP4004	3.3	3.3
TP4501	0	0
TP4502	0	0
TP4503	-0.2	-0.2
TP4504	-1.7	-1.7
TP4591	-0.2	-0.2
TP4592	-1.7	-1.7
TP5301	2.9	2.9
TP5302	2.9	2.9
TP5303	2.9	2.9
TP5304	11.6	11.6
TP5306	2.0	2.0
TP5310	0.4	0.4
TP5401	3.7	3.7
TP5402	1.4	1.4
TP5501	0	0
TP5502	0.4	0.4
TP5503	2.1	2.1
TP5504	0	0
TP5505	0	0
TP5506	1.7	1.7

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

MAIN C.B.A. (SYSTEM CONTROL/SERVO SECTION)

MODE PIN NO.	REC	PLAY	STOP
IC2601			
1	13.2	13.3	13.5
2	13.2	13.3	13.5
3	13.7	13.8	14.0
4	1.2	1.2	1.3
5	5.2	5.2	5.3
6	0.9	0.9	1.0
7	1.0	1.0	1.0
8	0.6	0.6	0.6
9	2.7	2.7	2.9
10	1.5	1.5	1.6
11	0	0	0
12	3.9	3.9	3.9
13	3.9	3.9	3.9
14	3.9	3.9	3.9
15	0.1	0.1	0.1
16	13.2	13.3	13.5
IC6001			
1	5.0	5.0	5.0
2	0	0	0
3	0	0	0
4	---	---	---
5	5.1	2.4	2.4
6	1.0	0.8	0.8
7	0	0	0
8	0	0	0
9	2.5	2.5	4.1
10	2.4	2.4	0
11	4.9	4.9	4.9
12	4.1	4.3	4.3
13	4.8	4.8	4.8
14	5.2	5.1	5.2
15	0	0	0
16	5.1	5.1	5.1
17	0	0	0
18	---	---	---
19	---	---	---
20	5.2	5.1	5.2
21	0	0	0
22	0	0	0
23	2.6	2.6	2.6
24	2.6	2.6	2.6
25	4.5	4.5	4.5
26	5.2	5.2	5.2
27	5.1	5.1	5.1
28	5.1	5.1	5.1
29	2.6	2.6	2.6
30	5.2	5.2	5.2
31	0	0	0
32	5.2	5.2	5.2
33	5.3	5.1	5.3
34	5.2	5.1	5.2
35	0	4.5	0
36	0	0	0
37	0	0	5.1
38	5.2	5.1	0
39	0	0	5.1
40	0	0	0
41	5.2	5.2	5.2
42	0	0	0
43	5.2	5.2	5.2
44	0	0	0
45	4.1	4.1	4.1
46	4.9	4.9	4.9
47	5.1	5.1	5.1
48	5.2	5.2	5.2
49	5.1	0	0
50	5.2	0	5.2
51	0	0	0
52	5.2	5.2	5.2
53	0	0	0
54	0	0	0
55	0	0	0
56	0	0	0
57	0.4	0.4	0.4
58	5.3	5.3	5.3
59	5.2	5.2	5.2
60	0	0	0
61	5.2	5.2	5.2
62	0	0	0
63	0.3	0.3	0.3
64	5.0	4.9	5.0
65	5.2	5.3	5.3
66	0	0	0
67	0	0	0
68	0	0	0
69	5.2	5.3	5.3
70	5.2	5.3	5.3
71	0	0	0
72	2.6	2.6	2.6
73	5.3	5.3	5.3
74	5.3	5.3	5.3
75	5.3	5.3	5.3
76	5.3	5.3	5.3
77	3.6	3.6	3.6
78	5.1	5.2	5.2
79	5.2	5.2	5.2
80	5.2	5.2	5.2
81	3.4	3.0	3.4
82	0	0	0
83	0	0	0
84	0	0	0
85	3.0	2.6	2.6
86	2.1	2.6	2.6
87	2.6	2.6	2.6
88	2.6	2.6	2.6
89	2.6	2.6	2.6
90	2.6	2.6	2.6
91	0	0	0
92	5.2	5.2	5.2
93	---	0	0
94	2.6	2.6	2.6
95	2.6	2.6	2.6
96	0	0	0
97	1.2	1.2	1.2
98	---	---	---
99	---	---	---
100	2.1	2.1	2.1
IC6002			
1	1.3	1.3	1.3
2	0	0	0
3	0	0	0
4	---	---	---
IC6003			
1	2.4	2.4	2.4
2	1.3	1.3	1.3
3	0	0	0
4	---	---	---
IC6004			
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0
5	5.1	5.1	5.1
6	5.0	5.0	5.1
7	0	0	0
8	5.1	5.1	5.1
Q6002			
E	11.8	11.8	11.8
C	11.6	0.5	0.5
B	11.0	11.8	11.8
Q6003			
E	4.5	0	0
C	11.0	11.8	11.8
B	5.0	0	0
Q6004			
E	5.3	5.3	5.3
C	5.1	5.1	5.1
B	4.3	4.3	4.3
Q6005			
E	0	0	0
C	0	0	0
B	0.8	0.8	0.8
Q6006			
E	5.1	5.1	5.1
C	5.1	5.1	5.1
B	0	0	0
Q6007			
E	0	0	0
C	5.1	5.1	5.1
B	0	0	0
Q6009			
E	0	0	0
C	5.1	5.1	5.1
Q6010			
E	0	0	0
C	5.1	5.1	5.1
TP6001	5.1	5.1	5.1
TP6002	5.1	5.2	5.2
TP6003	3.4	3.0	3.0
TP6004	---	---	---
TP6005	---	---	---
TP6006	0	0	0
TP6008	0	0	0
TP6009	5.2	5.2	5.2
TP6013	5.1	2.5	2.5
TP6021	0	0	5.1
TP6022	5.1	5.1	0
TP6023	0	0	5.1
TP6201	2.4	2.4	0
TP6202	2.5	2.5	4.1
TP6203	2.6	2.6	2.6
TP6204	1.2	1.2	1.2
TP6205	2.6	2.6	2.6
TP6206	3.0	2.6	2.6
TP6207	2.6	2.6	2.6
TP6208	2.5	2.5	4.1
TP6209	2.6	2.6	2.6
TP6210	0	0	0
TP6211	2.7	2.7	4.1
TP6213			
TP6501	4.7	4.7	4.7

CAPSTAN STATOR C.B.A.

MODE PIN NO.	REC	PLAY	STOP
P2502			
1	13.6	13.6	14.3
2	5.2	5.2	5.2
3	5.3	5.3	5.3
4	2.5	2.4	2.6
5	0	0	0
6	2.6	2.6	2.6
7	0	0	0
8	0.5	0.5	0.5
9	2.6	2.6	2.6
10	0.1	0.1	2.6
11	0	0	0
12	0	0	0
P2503			
1	1.8	1.7	1.5
2	1.8	1.7	1.5

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

Hi-Fi AUDIO/VIDEO HEAD AMP C.B.A.

MODE / PIN NO.	REC	PLAY
IC3501		
1	2.6	2.6
2	0.2	4.2
3	0	1.4
4	0	0.7
5	0	0
6	0	0.7
7	0	1.4
8	0	0
9	0	0
10	0	2.1
11	0	0
12	0	0
13	0	0
14	0	0
15	0	0
16	5.9	0
17	5.9	0.1
18	6.3	0
19	---	---
20	---	---
21	---	---
22	---	---
23	---	---
24	---	---
25	11.8	0
26	5.0	5.2
27	0	0
28	0	0
29	0	0
30	2.7	0
31	5.1	0
32	5.0	0.3
33	0	0
34	0.2	0.4
35	11.9	12.0
36	0.3	4.9
IC4401		
1	0	2.6
2	4.0	0
3	0.6	0
4	0	0
5	4.0	0
6	4.0	0
7	1.0	1.0
8	0.7	0.7
9	2.6	2.6
10	5.1	5.1
11	0	0
12	0	0
13	3.9	3.9
14	3.9	3.9
15	0.1	0.1
16	13.0	13.0
TP3501	0	0
TP4402	4.0	0
TP4405	0	0
TP4406	2.6	2.6

AUDIO C.B.A.

MODE / PIN NO.	REC	PLAY
IC4201		
1	2.5	2.5
2	2.5	2.5
3	2.5	2.5
4	2.5	2.5
5	25	2.5
6	5.0	5.0
7	2.6	2.6
8	1.5	1.5
9	0	0
10	0	0
11	2.5	2.5
12	2.6	2.6
13	0	0
14	0.1	0.1
15	0	0
16	4.3	4.3
17	0	0
18	0	0
19	0	0
20	0	0
21	0	0
22	0	0
23	5.1	5.1
24	0	0
25	2.6	2.6
26	2.5	2.5
27	2.6	2.6
28	0	0
29	1.5	1.5
30	2.6	2.6
31	5.0	5.0
32	2.5	2.5
33	2.5	2.5
34	2.5	2.5
35	2.5	2.5
36	0.1	0.1
37	0	0
38	2.5	2.5
39	11.6	11.6
40	0	0
41	6.1	6.1
42	0	0
43	0	0
44	0	0
45	6.0	6.0
46	0	0
47	0	0
48	0	0
IC4271		
1	0	0
2	0	0
3	0	0
4	5.0	5.0
5	0	0
6	0.1	0..1
7	0.1	0.1
8	0.1	0.1
9	0	0
10	0	0
11	-5.7	-5.7
12	0	0
13	0	0
14	0	0
IC4301		
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	-5.7	-5.7
8	0	0
9	0	0
10	0	0
11	0	0
12	0	0
13	0	0
14	0.1	0.1
15	0	0
16	5.0	5.0
IC4302		
1	0	0
2	0	0
3	0	0
4	-5.7	-5.7
5	0	0
6	0	0
7	0.1	0.1
8	5.0	5.0
IC4303		
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	-5.7	-5.7
8	0	0
9	0	0
10	0	0
11	0	0
12	0	0
13	0	0
14	0.1	0.1
15	0	0
16	5.0	5.0
IC9001		
1	4.2	4.2
2	4.1	4.1
3	4.2	4.2
4	9.1	9.1
5	2.4	2.4
6	0	0
7	4.2	4.2
8	3.7	3.7
9	1.3	1.3
10	4.0	4.0
11	4.0	4.0
12	4.0	4.0
13	5.0	5.0
14	4.3	4.3
15	4.1	4.1
16	4.2	4.2
17	0	0
18	5.2	5.2
19	0	0
20	4.1	4.1
21	1.8	1.8
22	4.2	4.2
23	4.2	4.2
24	4.2	4.2
25	4.2	4.2
26	1.8	1.8
27	4.2	4.2
28	3.3	3.3
29	4.2	4.2
30	4.1	4.1
IC9002		
1	0	0
2	0	0
3	0	0
4	-5.7	-5.7
5	0	0
6	0	0
7	0.1	0.1
8	5.0	5.0
IC9101		
1	4.2	4.2
2	4.1	4.1
3	4.2	4.2
4	9.1	9.1
5	2.4	2.4
6	0	0
7	4.2	4.2
8	3.7	3.7
9	1.3	1.3
10	4.0	4.0
11	4.0	4.0
12	4.0	4.0
13	5.0	5.0
14	4.3	4.3
15	4.1	4.1
16	4.2	4.2
17	0	0
18	5.2	5.2
19	0	0
20	4.1	4.1
21	1.8	1.8
22	4.2	4.2
23	4.2	4.2
24	4.2	4.2
25	4.2	4.2
26	1.8	1.8
27	4.2	4.2
28	3.3	3.3
29	4.2	4.2
30	4.1	4.1
IC9201		
1	3.1	3.1
2	3.7	3.7
3	5.1	5.1
4	4.2	4.2
5	0	0
6	5.1	5.1
7	4.5	4.5
8	2.8	2.8
9	2.8	2.8
Q9001		
E	3.1	3.1
C	5.0	5.0
B	3.8	3.8
Q9002		
E	0	0
C	0	0
B	0.8	0.8
Q9101		
E	3.1	3.1
C	5.0	5.0
B	3.8	3.8
Q9102		
E	0	0
C	0	0
B	0.8	0.8
TP4201	0	0
TP4202	0	0
TP4205	2.5	2.5
TP4206	0	0
TP4207	1.7	1.7
TP4208	2.6	2.6
TP9001	0	0
TP9002	0	0
TP9003	0	0
TP9101	4.2	4.2
TP9102	4.2	4.2
TP9103	0	0
TP9201	5.0	5.0

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES, REFER TO BEGINNING OF SCHEMATIC SECTION.

TV PROCESS C.B.A.

MODE PIN NO.	REC	PLAY
IC5201		
1	0	1.1
2	1.6	1.6
3	0.5	0.6
4	0	0
5	0	0
6	3.3	3.4
7	3.4	3.3
8	1.0	0
9	1.6	0
10	0.5	0.6
11	0	0
12	0	0
13	0	3.3
14	0	0
15	3.4	3.4
16	0.2	0
17	0	0
18	0	0.4
19	0	0
20	0.4	0.3
21	0.2	0
22	3.2	3.2
23	3.2	3.2
24	0	0
25	3.3	3.3
26	0.2	0.2
27	0	0
28	0	0
29	0	0
30	0.5	0.5
31	0.2	0.2
32	0	0
33	0	0
34	0	3.3
35	3.4	3.4
36	0	0
37	3.0	3.3
38	0	0.1
39	0	2.8
40	0	0
41	0	0.8
42	0	0
43	0	0
44	1.1	0
45	0	0
46	3.3	3.3
47	0	0
48	0	0
49	0	0
50	3.3	3.3
51	0.8	0.7
52	0	0
53	1.2	0.8
54	0	0
55	1.1	1.1
56	0	0
57	0	0
58	2.1	2.1
59	1.7	1.7
60	1.8	1.6
61	1.7	1.7
62	3.4	3.4
63	3.4	3.3
64	3.4	3.4
IC5202		
1	4.5	4.5
2	0	0
3	0	3.4
IC5301		
1	2.7	2.7
2	2.9	2.7
3	3.8	4.0
4	5.2	5.2
5	2.1	2.2
6	2.1	2.2
7	6.2	6.2
8	0.3	0.3
9	0	0
10	3.8	3.9
11	5.3	5.3
12	2.4	2.4
13	4.2	4.2
14	6.2	6.2
15	4.3	4.3
16	0.8	0.7
17	0	0
18	0.1	0.1
19	1.8	1.8
20	0	0
21	3.7	3.7
22	3.5	3.6
23	3.7	3.7
24	9.1	9.1
25	3.6	3.6
26	9.2	9.2
27	0	0
28	0	0
29	0	0
30	5.8	5.8
31	6.2	2.0
32	3.7	3.7
33	7.6	7.6
34	8.2	8.2
35	5.2	5.2
36	4.3	4.3
37	9.7	9.7
38	9.1	9.1
39	2.3	2.1
40	1.6	1.7
41	2.4	2.6
42	0	0
43	5.1	5.1
44	5.1	5.1
45	0.4	0.9
46	2.7	2.3
47	5.1	5.1
48	2.5	2.5
IC5351		
1	0	0
2	0	0
3	0	0
4	0	0
5	2.1	2.1
6	4.9	4.9
7	1.6	1.6
8	0	0
IC5352		
1	0	0
2	0	0
3	0	0
4	0	0
5	2.2	2.3
6	4.9	4.9
7	1.7	1.5
8	0	0
IC5353		
1	0	2.1
2	0.3	0
3	0	0.1
4	0	0
5	2.0	2.1
6	4.9	4.9
7	0	2.1
8	0	0
IC5651		
1	0	0
2	2.3	2.3
3	2.8	2.8
4	2.3	2.3
5	1.4	1.4
6	1.4	1.4
7	0	0
8	5.0	5.0
9	0	0
10	2.4	2.4
11	2.2	2.2
12	3.4	3.4
13	3.8	3.8
14	0.1	0.1
15	3.3	3.3
16	4.9	4.9
Q5201		
E	0	0
C	4.4	4.4
B	0	0
Q5202		
E	4.4	0.5
C	3.2	3.2
B	3.8	3.9
Q5203		
E	4.3	4.4
C	3.2	3.2
B	3.9	3.9
Q5204		
E	0	0
C	0.5	0.5
B	0.7	0.7
Q5205		
E	0	0
C	0.2	0.2
B	0.7	0.7
Q5206		
E	3.3	3.3
C	0	0
B	2.6	2.6
Q5207		
E	2.0	1.9
C	5.0	4.9
B	2.5	2.5
Q5208		
E	5.0	5.0
C	0.5	0.5
B	4.6	4.7
Q5209		
E	0	0
C	0.7	0.7
B	-0.4	-0.4
Q5210		
E	1.6	1.6
C	0	0
B	0.9	0.9
Q5211		
E	1.0	1.0
C	7.7	7.7
B	1.6	1.6
Q5212		
E	8.4	8.4
C	1.8	1.8
B	7.7	7.7
Q5213		
E	2.4	2.4
C	0	0
B	1.8	1.8
Q5214		
E	1.5	1.2
C	0	0
B	0.8	0.5
Q5215		
E	1.0	0.6
C	8.4	8.5
B	1.6	1.2
Q5216		
E	9.0	9.0
C	1.5	0.7
B	8.4	8.5
Q5217		
E	2.1	1.4
C	0	0
B	1.5	0.7
Q5218		
E	0	0
C	0	0
B	0.8	0.8
Q5301		
E	2.9	2.9
C	9.0	9.0
B	3.5	3.5
Q5302		
E	7.2	7.2
C	9.1	9.1
B	7.7	7.8
Q5651		
E	1.9	1.9
C	0	0
B	1.2	1.2
Q5652		
E	1.1	1.1
C	4.2	4.2
B	1.6	1.6
Q5653		
E	2.3	2.3
C	0	0
B	1.6	1.6
Q5654		
E	2.5	2.5
C	0	0
B	1.8	1.8
Q5655		
E	2.7	2.7
C	9.1	9.1
B	3.3	3.3
Q5656		
E	3.2	3.2
C	9.0	9.0
B	3.8	3.8
Q5901		
E	9.1	9.1
C	11.6	11.6
B	9.7	9.7
TP5203	0.2	0
TP5204	0.4	0.4
TP5206	0.8	0.8
TP5207	0	0
TP5305	1.8	1.8
TP5307	0	0
TP5308	1.9	1.9
TP5309	1.2	1.2
TP5311	0	0
TP5312	2.5	2.5
TP5651	2.3	2.3
TP5652	1.8	1.8

VERTICAL C.B.A.

MODE PIN NO.	REC	PLAY
IC451		
1	11.4	11.4
2	3.7	3.7
3	5.7	5.7
4	5.8	5.8
5	0	0
6	5.4	5.4
7	0	0
8	0.1	0.1
9	0	0
10	0	0
11	0	0
12	0	0
13	2.9	2.9
Q431		
E	2.0	2.0
C	0.1	0.1
B	1.4	1.4
Q432		
E	0	0
C	0.1	0.1
B	0.2	0.2
Q433		
E	0.1	0.1
C	0	0
B	0	0
Q434		
E	0.2	0.2
C	0.2	0.2
B	0.8	0.8
Q502		
E	0	0
C	12.0	12.0
B	0	0
Q541		
E	0	0
C	1.6	1.6
B	0	0
Q542		
E	0	0
C	0	0
B	0.7	0.7
TP553	0	0
TP554	0	0

TV POWER C.B.A.

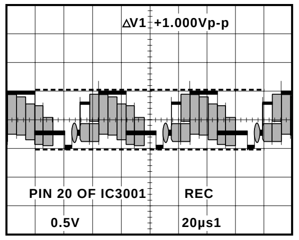
MODE PIN NO.	REC	PLAY
IC801		
1	5.4	5.4
2	0.1	0.1
3	0.1	0.1
4	0	0
5	-5.1	-5.1

CRT C.B.A.

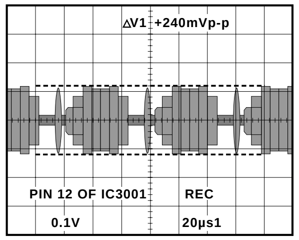
MODE PIN NO.	REC	PLAY
Q351		
E	3.1	3.1
C	138.2	138.2
B	3.6	3.6
Q352		
E	1.6	1.6
C	192.8	192.8
B	2.1	2.1
Q353		
E	1.6	1.6
C	193.4	193.4
B	2.1	2.1
TP47	0	0
TP49	2.1	2.1
TP50	193.5	193.5

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

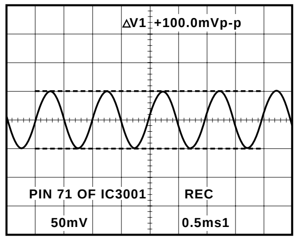
TV/VCR MAIN C.B.A. / TV PROCESS C.B.A. / VERTICAL C.B.A.



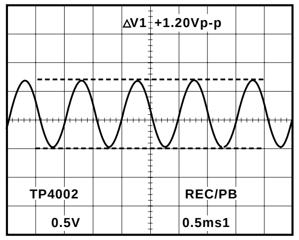
WF1



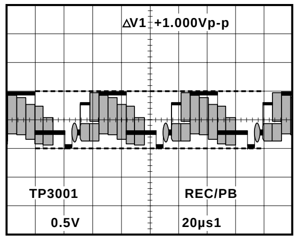
WF6



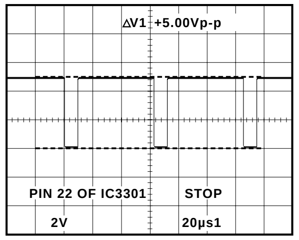
WF9



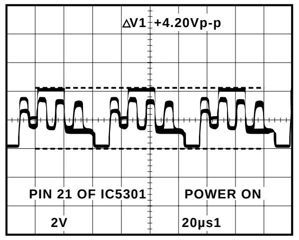
WF14



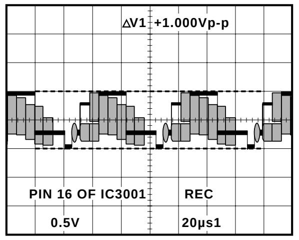
WF18



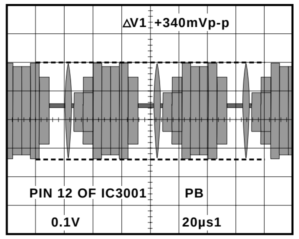
WF21
(BLUE BACK)



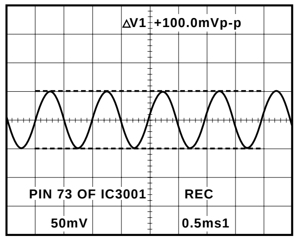
WF27



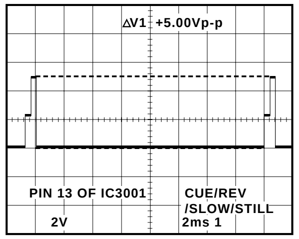
WF2



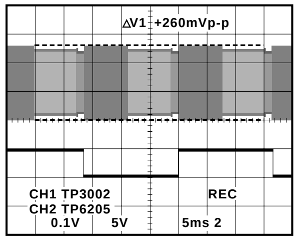
WF6



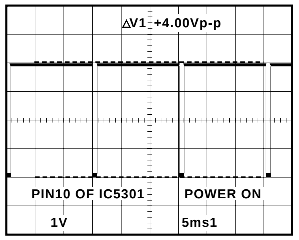
WF10



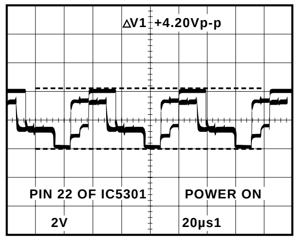
WF15



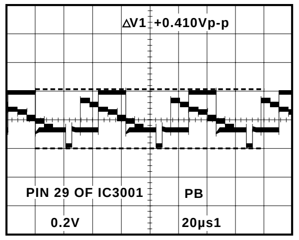
CH1 WF19
CH2 WF34



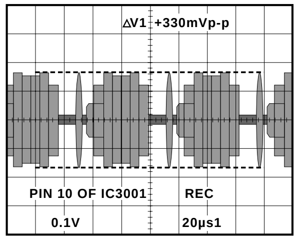
WF23



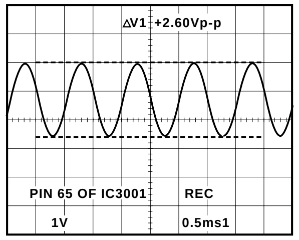
WF28



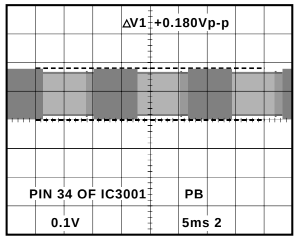
WF3



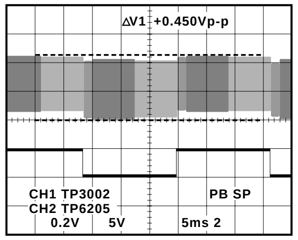
WF7



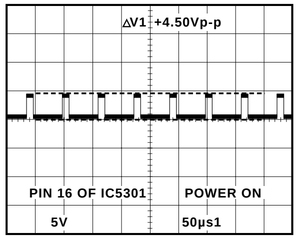
WF11



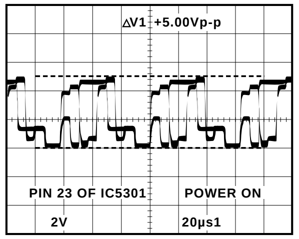
WF16



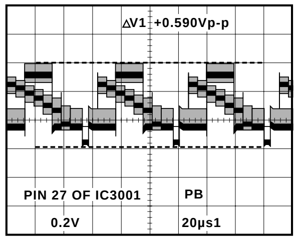
CH1 WF19
CH2 WF34



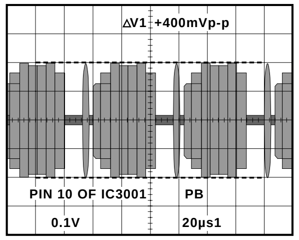
WF24



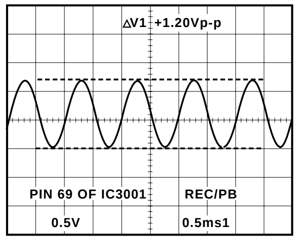
WF29



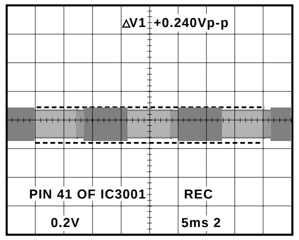
WF4



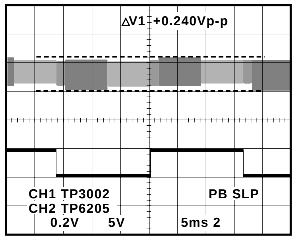
WF7



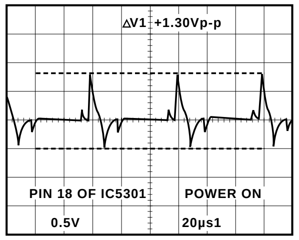
WF12



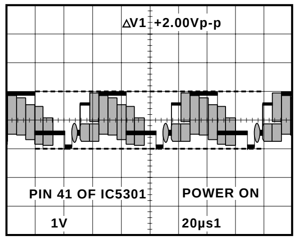
WF17



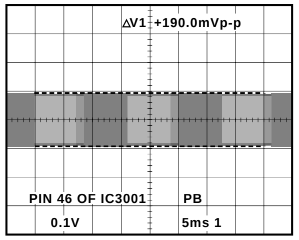
CH1 WF19
CH2 WF34



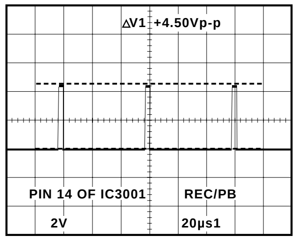
WF25



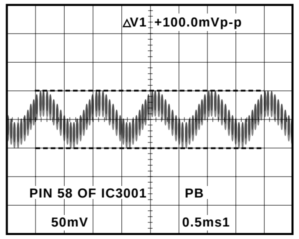
WF30



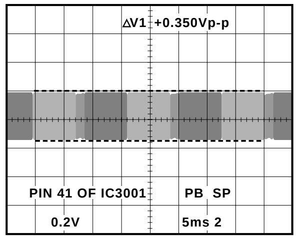
WF5



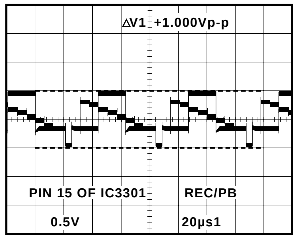
WF8



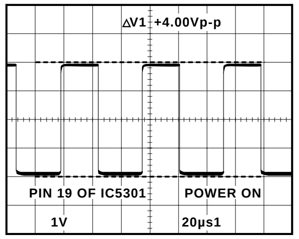
WF13



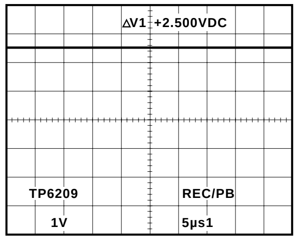
WF17



WF20

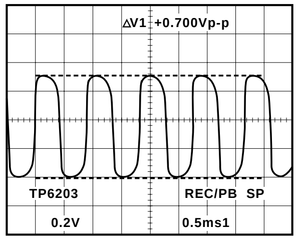


WF26

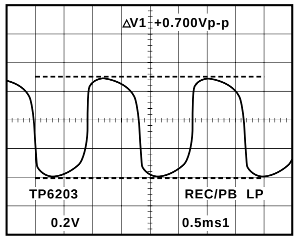


WF31

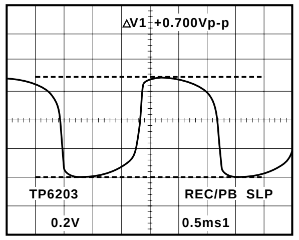
NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES, REFER TO BEGINNING OF SCHEMATIC SECTION.



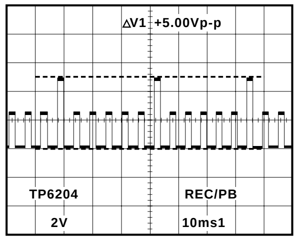
WF32



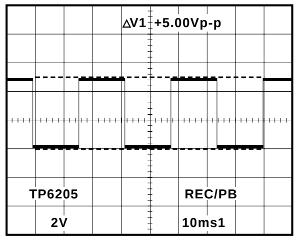
WF32



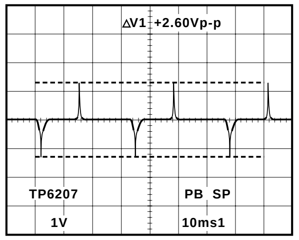
WF32



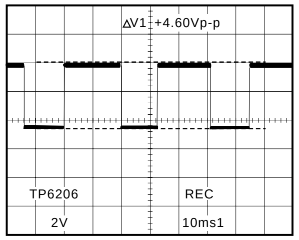
WF33



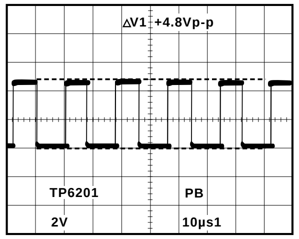
WF34



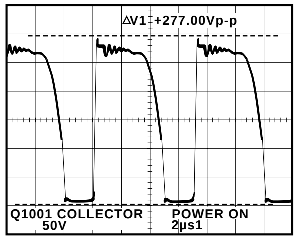
WF35



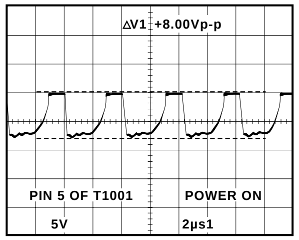
WF37



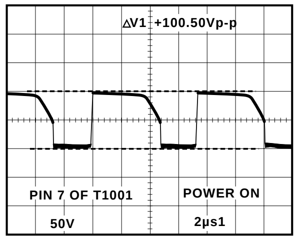
WF38



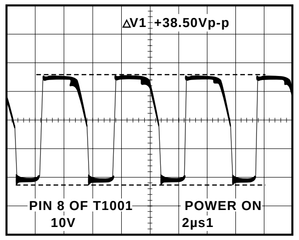
WF39



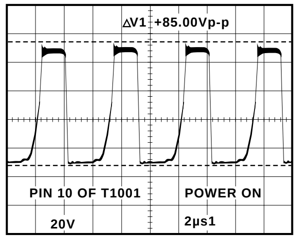
WF40



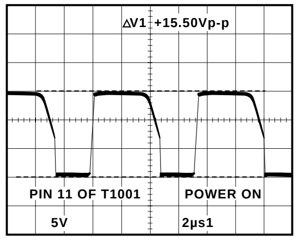
WF41



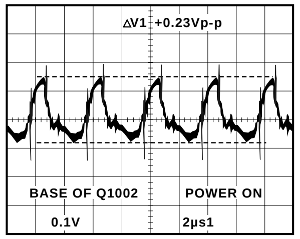
WF42



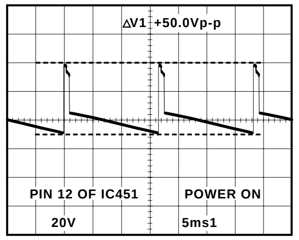
WF43



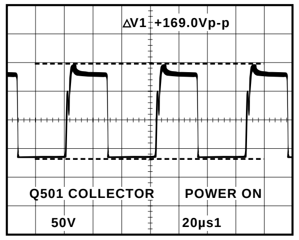
WF44



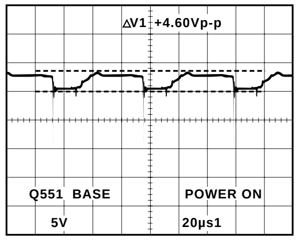
WF45



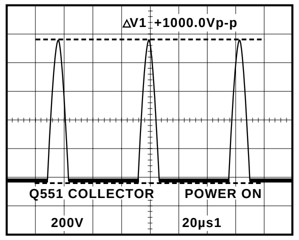
WF46



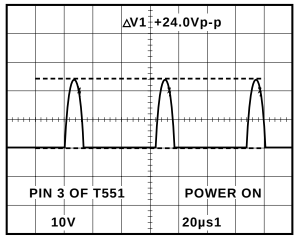
WF47



WF48

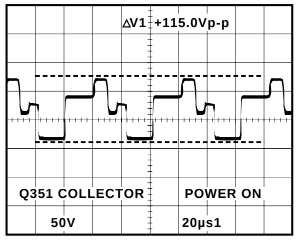


WF49

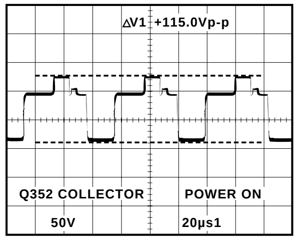


WF50

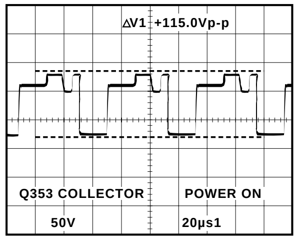
CRT C.B.A.



WF60

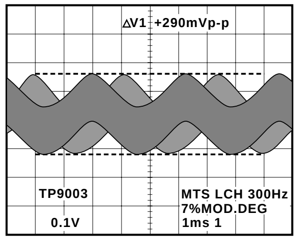


WF61

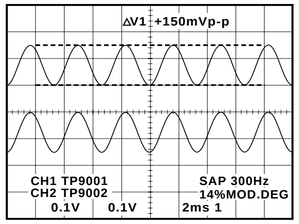


WF62

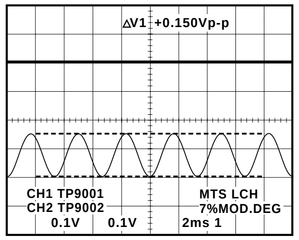
AUDIO C.B.A.



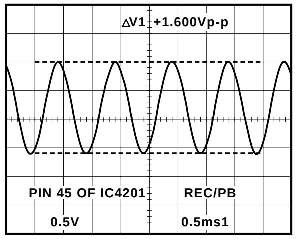
WF70



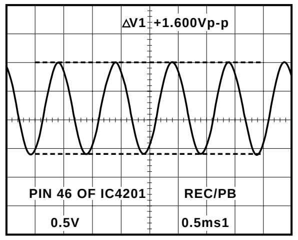
CH1 WF71
CH2 WF72



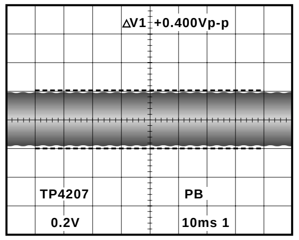
CH1 WF71
CH2 WF72



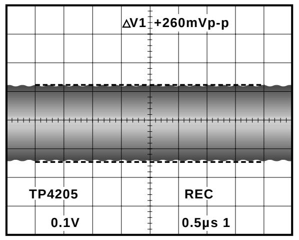
WF73



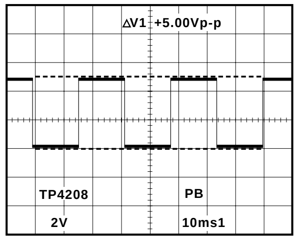
WF74



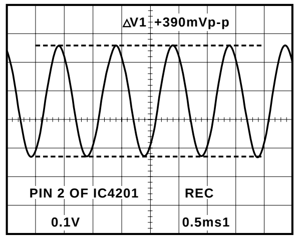
WF75



WF76

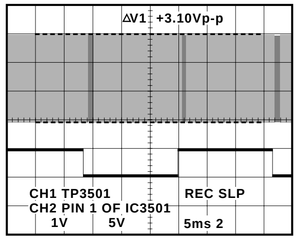


WF77

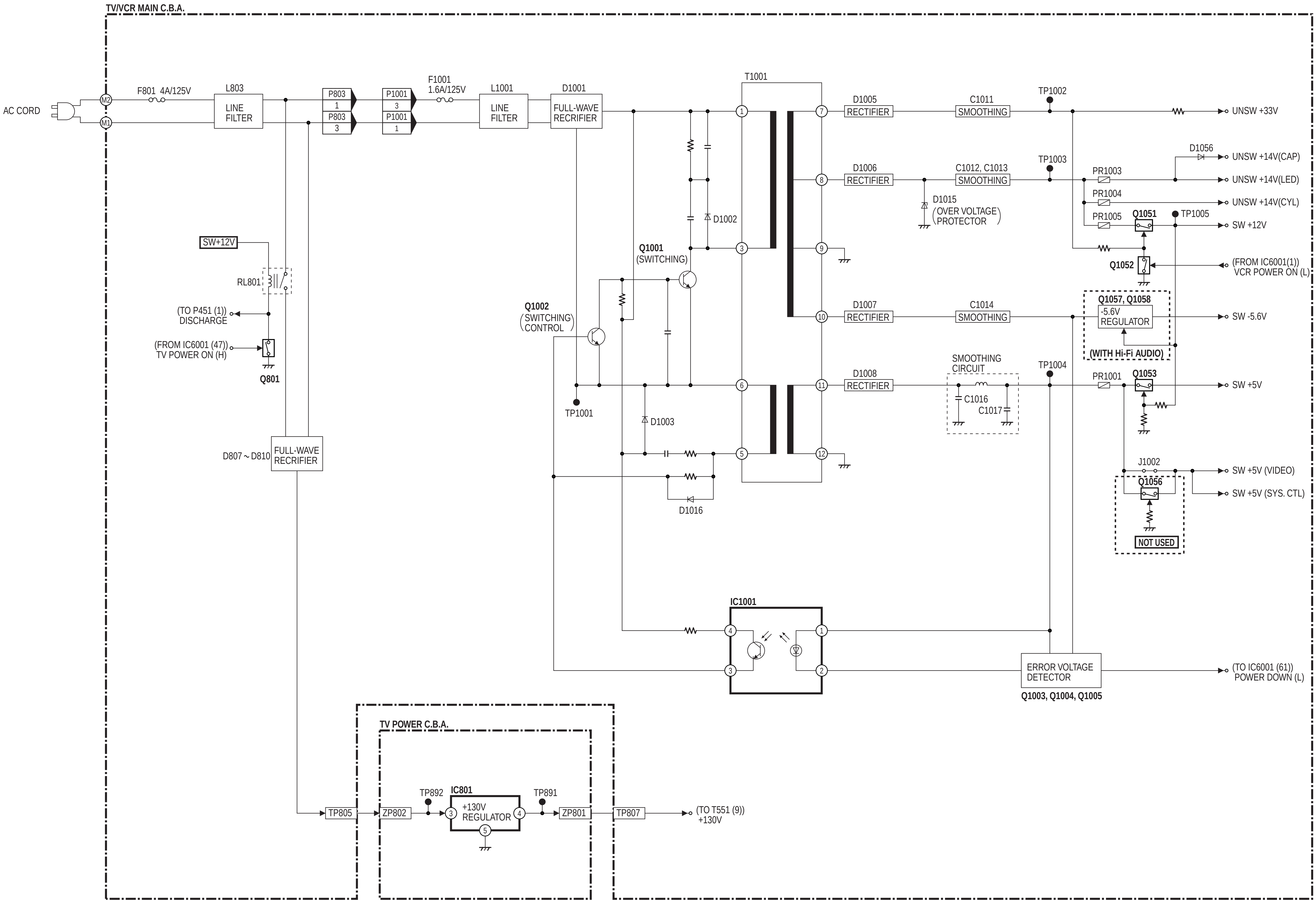


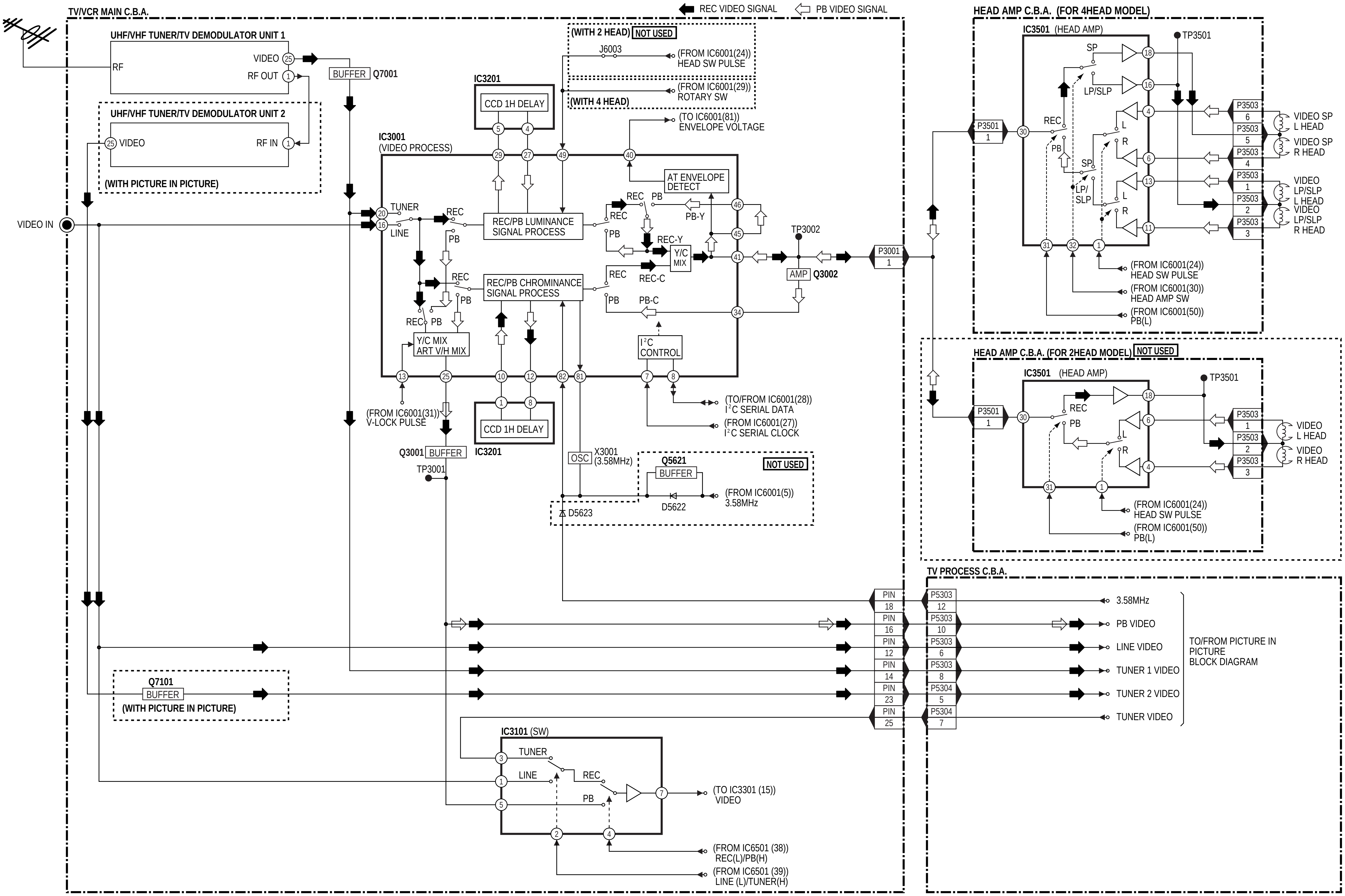
WF78

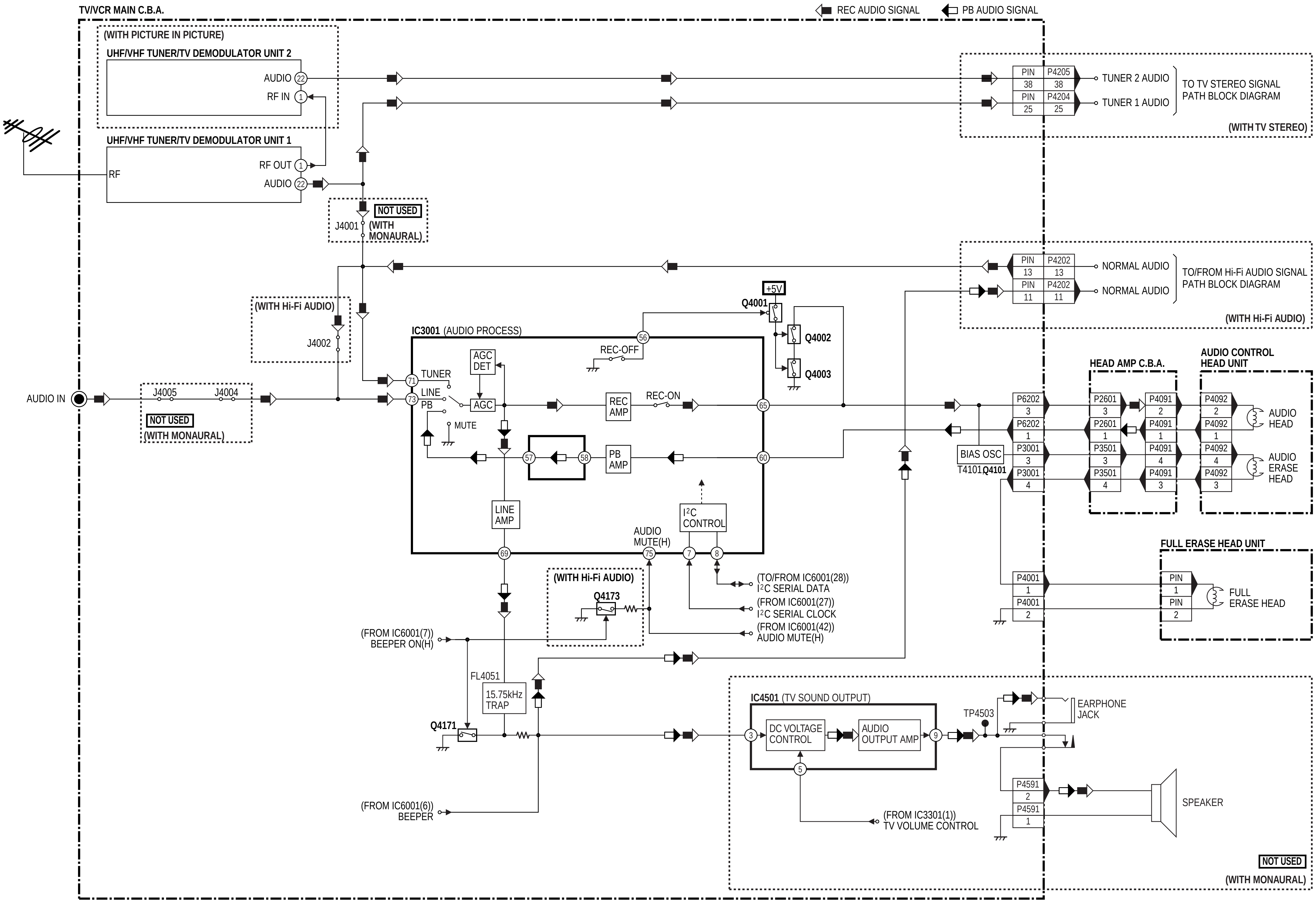
Hi-Fi AUDIO/VIDEO HEAD AMP C.B.A.

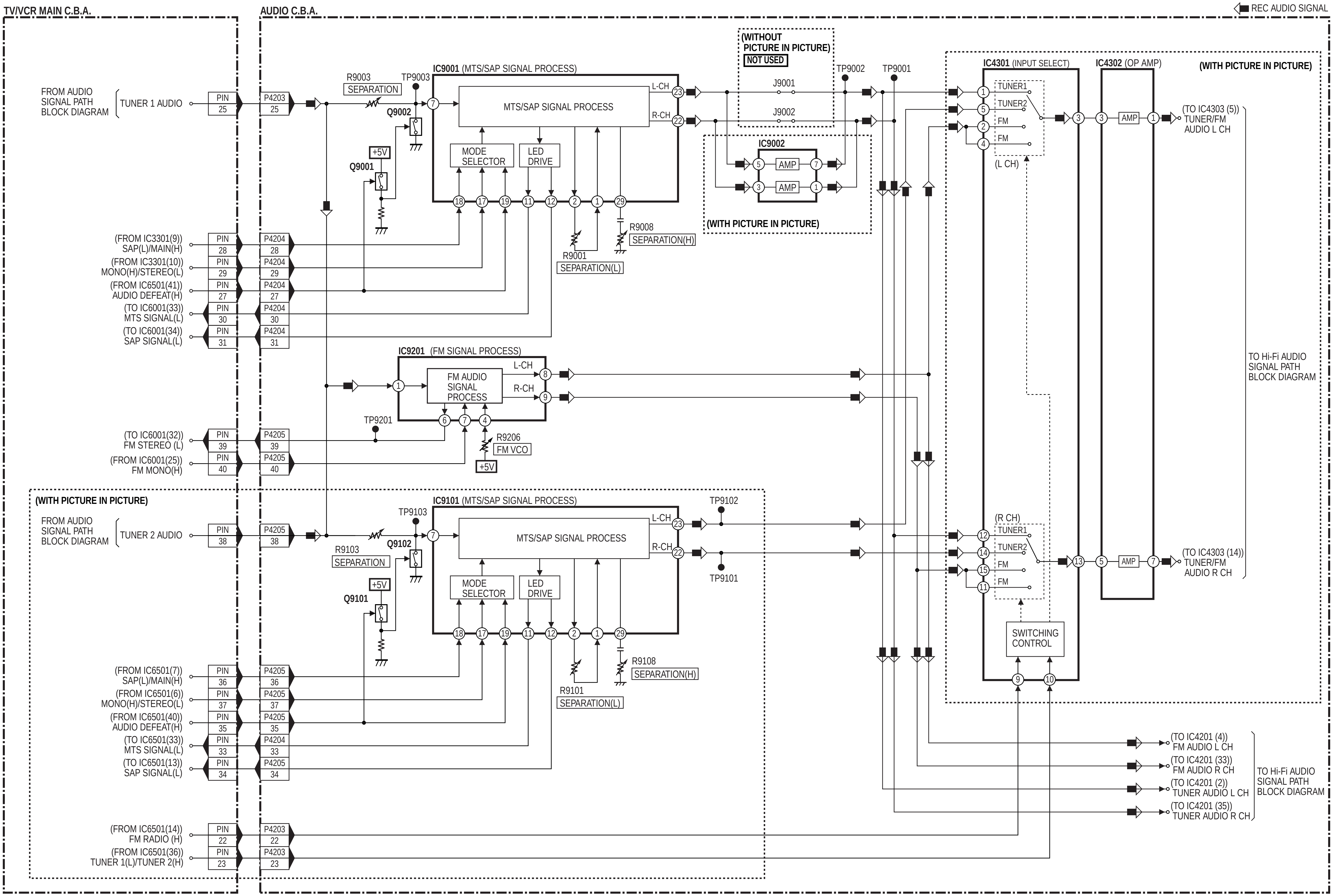


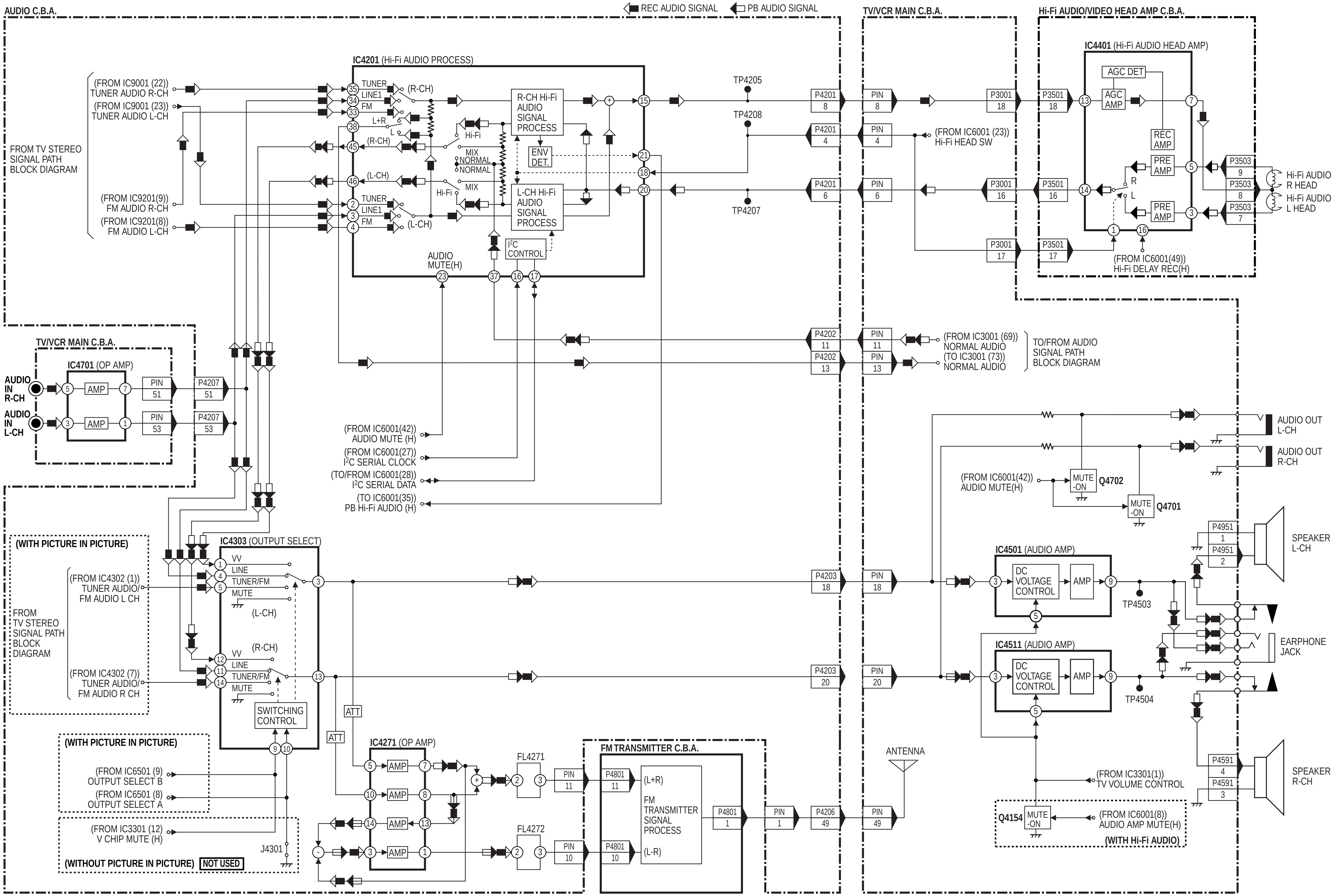
CH1 WF84
CH2 WF85


TV/VCR MAIN C.B.A.
AC CORD
M2
M1
F801 4A/125V
L803
LINE FILTER
P803
1
P803
3
P1001
3
P1001
1
F1001
1.6A/125V
L1001
LINE FILTER
D1001
FULL-WAVE RECRIFIER
T1001
1
3
6
5
7
8
9
10
11
12
D1002
Q1001
(SWITCHING)
Q1002
(SWITCHING CONTROL)
TP1001
D1003
D1016
D1005
RECTIFIER
C1011
SMOOTHING
TP1002
UNSW +33V
D1006
RECTIFIER
C1012, C1013
SMOOTHING
TP1003
D1015
(OVER VOLTAGE PROTECTOR)
PR1003
D1056
UNSW +14V(CAP)
UNSW +14V(LED)
PR1004
UNSW +14V(CYL)
PR1005
Q1051
TP1005
SW +12V
Q1052
(FROM IC6001(1)) VCR POWER ON (L)
D1007
RECTIFIER
C1014
SMOOTHING
Q1057, Q1058
-5.6V REGULATOR
(WITH Hi-Fi AUDIO)
SW -5.6V
D1008
RECTIFIER
SMOOTHING CIRCUIT
C1016
C1017
TP1004
PR1001
Q1053
SW +5V
J1002
SW +5V (VIDEO)
Q1056
SW +5V (SYS. CTL)
NOT USED
SW+12V
RL801
(TO P451 (1)) DISCHARGE
(FROM IC6001 (47)) TV POWER ON (H)
Q801
D807 ~ D810
FULL-WAVE RECRIFIER
IC1001
4
3
1
2
ERROR VOLTAGE DETECTOR
Q1003, Q1004, Q1005
(TO IC6001 (61)) POWER DOWN (L)
TV POWER C.B.A.
TP805
ZP802
TP892
IC801
+130V REGULATOR
3
4
5
TP891
ZP801
TP807
(TO T551 (9)) +130V


REC VIDEO SIGNAL
PB VIDEO SIGNAL
TV/VCR MAIN C.B.A.
UHF/VHF TUNER/TV DEMODULATOR UNIT 1
RF
VIDEO
RF OUT
BUFFER
Q7001
UHF/VHF TUNER/TV DEMODULATOR UNIT 2
VIDEO
RF IN
(WITH PICTURE IN PICTURE)
VIDEO IN
(WITH 2 HEAD) NOT USED
J6003
(FROM IC6001(24))
HEAD SW PULSE
(FROM IC6001(29))
ROTARY SW
(WITH 4 HEAD)
IC3201
CCD 1H DELAY
(TO IC6001(81))
ENVELOPE VOLTAGE
IC3001
(VIDEO PROCESS)
TUNER
LINE
REC
PB
REC/PB LUMINANCE
SIGNAL PROCESS
AT ENVELOPE
DETECT
REC-Y
PB-Y
Y/C
MIX
REC/PB CHROMINANCE
SIGNAL PROCESS
REC-C
PB-C
Y/C MIX
ART V/H MIX
I²C
CONTROL
TP3002
AMP
Q3002
P3001
(FROM IC6001(31))
V-LOCK PULSE
Q3001
BUFFER
TP3001
CCD 1H DELAY
IC3201
(TO/FROM IC6001(28))
I²C SERIAL DATA
(FROM IC6001(27))
I²C SERIAL CLOCK
OSC
X3001
(3.58MHz)
Q5621
BUFFER
NOT USED
D5622
D5623
(FROM IC6001(5))
3.58MHz
HEAD AMP C.B.A. (FOR 4HEAD MODEL)
IC3501 (HEAD AMP)
TP3501
SP
LP/SLP
REC
PB
LP/
SLP
L
R
P3501
P3503
VIDEO SP
L HEAD
VIDEO SP
R HEAD
VIDEO
LP/SLP
L HEAD
VIDEO
LP/SLP
R HEAD
(FROM IC6001(24))
HEAD SW PULSE
(FROM IC6001(30))
HEAD AMP SW
(FROM IC6001(50))
PB(L)
HEAD AMP C.B.A. (FOR 2HEAD MODEL) NOT USED
IC3501 (HEAD AMP)
TP3501
VIDEO
L HEAD
VIDEO
R HEAD
(FROM IC6001(24))
HEAD SW PULSE
(FROM IC6001(50))
PB(L)
TV PROCESS C.B.A.
PIN
P5303
P5304
3.58MHz
PB VIDEO
LINE VIDEO
TUNER 1 VIDEO
TUNER 2 VIDEO
TUNER VIDEO
TO/FROM PICTURE IN
PICTURE
BLOCK DIAGRAM
Q7101
BUFFER
(WITH PICTURE IN PICTURE)
IC3101 (SW)
TUNER
LINE
REC
PB
(TO IC3301 (15))
VIDEO
(FROM IC6501 (38))
REC(L)/PB(H)
(FROM IC6501 (39))
LINE (L)/TUNER(H)


TV/VCR MAIN C.B.A.
REC AUDIO SIGNAL
PB AUDIO SIGNAL
(WITH PICTURE IN PICTURE)
UHF/VHF TUNER/TV DEMODULATOR UNIT 2
AUDIO 22
RF IN 1
UHF/VHF TUNER/TV DEMODULATOR UNIT 1
RF
RF OUT 1
AUDIO 22
NOT USED
J4001
(WITH MONAURAL)
PIN 38
P4205 38
TUNER 2 AUDIO
PIN 25
P4204 25
TUNER 1 AUDIO
TO TV STEREO SIGNAL PATH BLOCK DIAGRAM
(WITH TV STEREO)
PIN 13
P4202 13
NORMAL AUDIO
PIN 11
P4202 11
NORMAL AUDIO
TO/FROM Hi-Fi AUDIO SIGNAL PATH BLOCK DIAGRAM
(WITH Hi-Fi AUDIO)
(WITH Hi-Fi AUDIO)
J4002
+5V
Q4001
Q4002
Q4003
IC3001 (AUDIO PROCESS)
56
REC-OFF
AGC DET
TUNER
LINE
PB
71
73
AGC
MUTE
REC AMP
REC-ON
65
57
58
PB AMP
60
LINE AMP
I2C CONTROL
AUDIO MUTE(H)
69
75
7
8
AUDIO IN
J4005
J4004
NOT USED
(WITH MONAURAL)
HEAD AMP C.B.A.
AUDIO CONTROL HEAD UNIT
P6202 3
P6202 1
P3001 3
P3001 4
BIAS OSC
T4101
Q4101
P2601 3
P2601 1
P3501 3
P3501 4
P4091 2
P4091 1
P4091 4
P4091 3
P4092 2
P4092 1
P4092 4
P4092 3
AUDIO HEAD
AUDIO ERASE HEAD
FULL ERASE HEAD UNIT
P4001 1
P4001 2
PIN 1
PIN 2
FULL ERASE HEAD
(TO/FROM IC6001(28)) I2C SERIAL DATA
(FROM IC6001(27)) I2C SERIAL CLOCK
(FROM IC6001(42)) AUDIO MUTE(H)
(WITH Hi-Fi AUDIO)
Q4173
(FROM IC6001(7)) BEEPER ON(H)
FL4051
15.75kHz TRAP
Q4171
(FROM IC6001(6)) BEEPER
IC4501 (TV SOUND OUTPUT)
3
DC VOLTAGE CONTROL
AUDIO OUTPUT AMP
9
5
TP4503
EARPHONE JACK
P4591 2
P4591 1
SPEAKER
(FROM IC3301(1)) TV VOLUME CONTROL
NOT USED
(WITH MONAURAL)


REC AUDIO SIGNAL
TV/VCR MAIN C.B.A.
AUDIO C.B.A.
FROM AUDIO SIGNAL PATH BLOCK DIAGRAM
TUNER 1 AUDIO
PIN 25
P4203 25
R9003
SEPARATION
TP9003
Q9002
+5V
Q9001
IC9001 (MTS/SAP SIGNAL PROCESS)
MTS/SAP SIGNAL PROCESS
MODE SELECTOR
LED DRIVE
L-CH
R-CH
R9008
SEPARATION(H)
R9001
SEPARATION(L)
(WITHOUT PICTURE IN PICTURE)
NOT USED
J9001
J9002
TP9002
TP9001
IC9002
AMP
(WITH PICTURE IN PICTURE)
IC4301 (INPUT SELECT)
IC4302 (OP AMP)
TUNER1
TUNER2
FM
(L CH)
(R CH)
AMP
(TO IC4303 (5)) TUNER/FM AUDIO L CH
(TO IC4303 (14)) TUNER/FM AUDIO R CH
TO Hi-Fi AUDIO SIGNAL PATH BLOCK DIAGRAM
SWITCHING CONTROL
(FROM IC3301(9)) SAP(L)/MAIN(H) PIN 28 P4204 28
(FROM IC3301(10)) MONO(H)/STEREO(L) PIN 29 P4204 29
(FROM IC6501(41)) AUDIO DEFEAT(H) PIN 27 P4204 27
(TO IC6001(33)) MTS SIGNAL(L) PIN 30 P4204 30
(TO IC6001(34)) SAP SIGNAL(L) PIN 31 P4204 31
IC9201 (FM SIGNAL PROCESS)
FM AUDIO SIGNAL PROCESS
TP9201
R9206
FM VCO
+5V
(TO IC6001(32)) FM STEREO (L) PIN 39 P4205 39
(FROM IC6001(25)) FM MONO(H) PIN 40 P4205 40
(WITH PICTURE IN PICTURE)
FROM AUDIO SIGNAL PATH BLOCK DIAGRAM
TUNER 2 AUDIO
PIN 38 P4205 38
TP9103
R9103
SEPARATION
Q9102
+5V
Q9101
IC9101 (MTS/SAP SIGNAL PROCESS)
MTS/SAP SIGNAL PROCESS
MODE SELECTOR
LED DRIVE
TP9102
TP9101
R9108
SEPARATION(H)
R9101
SEPARATION(L)
(FROM IC6501(7)) SAP(L)/MAIN(H) PIN 36 P4205 36
(FROM IC6501(6)) MONO(H)/STEREO(L) PIN 37 P4205 37
(FROM IC6501(40)) AUDIO DEFEAT(H) PIN 35 P4205 35
(TO IC6501(33)) MTS SIGNAL(L) PIN 33 P4204 33
(TO IC6501(13)) SAP SIGNAL(L) PIN 34 P4205 34
(FROM IC6501(14)) FM RADIO (H) PIN 22 P4203 22
(FROM IC6501(36)) TUNER 1(L)/TUNER 2(H) PIN 23 P4203 23
(TO IC4201 (4)) FM AUDIO L CH
(TO IC4201 (33)) FM AUDIO R CH
(TO IC4201 (2)) TUNER AUDIO L CH
(TO IC4201 (35)) TUNER AUDIO R CH
TO Hi-Fi AUDIO SIGNAL PATH BLOCK DIAGRAM


REC AUDIO SIGNAL
PB AUDIO SIGNAL
AUDIO C.B.A.
TV/VCR MAIN C.B.A.
Hi-Fi AUDIO/VIDEO HEAD AMP C.B.A.
IC4201 (Hi-Fi AUDIO PROCESS)
(FROM IC9001 (22))
TUNER AUDIO R-CH
(FROM IC9001 (23))
TUNER AUDIO L-CH
FROM TV STEREO SIGNAL PATH BLOCK DIAGRAM
(FROM IC9201(9))
FM AUDIO R-CH
(FROM IC9201(8))
FM AUDIO L-CH
TUNER
LINE1
FM
L+R
L
(R-CH)
(L-CH)
Hi-Fi
MIX
NORMAL
R-CH Hi-Fi AUDIO SIGNAL PROCESS
L-CH Hi-Fi AUDIO SIGNAL PROCESS
ENV DET.
I²C CONTROL
AUDIO MUTE(H)
TP4205
TP4208
TP4207
P4201
PIN
P3001
P3501
IC4401 (Hi-Fi AUDIO HEAD AMP)
AGC DET
AGC AMP
REC AMP
PRE AMP
R
L
(FROM IC6001 (23))
Hi-Fi HEAD SW
Hi-Fi AUDIO R HEAD
Hi-Fi AUDIO L HEAD
P3503
(FROM IC6001(49))
Hi-Fi DELAY REC(H)
P4202
(FROM IC3001 (69))
NORMAL AUDIO
(TO IC3001 (73))
NORMAL AUDIO
TO/FROM AUDIO SIGNAL PATH BLOCK DIAGRAM
IC4701 (OP AMP)
AUDIO IN R-CH
AUDIO IN L-CH
AMP
P4207
(FROM IC6001(42))
AUDIO MUTE (H)
(FROM IC6001(27))
I²C SERIAL CLOCK
(TO/FROM IC6001(28))
I²C SERIAL DATA
(TO IC6001(35))
PB Hi-Fi AUDIO (H)
AUDIO OUT L-CH
AUDIO OUT R-CH
(FROM IC6001(42))
AUDIO MUTE(H)
MUTE -ON
Q4702
Q4701
(WITH PICTURE IN PICTURE)
IC4303 (OUTPUT SELECT)
VV
LINE
TUNER/FM
MUTE
(L-CH)
(R-CH)
SWITCHING CONTROL
(FROM IC4302 (1))
TUNER AUDIO/
FM AUDIO L CH
FROM TV STEREO SIGNAL PATH BLOCK DIAGRAM
(FROM IC4302 (7))
TUNER AUDIO/
FM AUDIO R CH
P4203
P4951
SPEAKER L-CH
IC4501 (AUDIO AMP)
DC VOLTAGE CONTROL
AMP
TP4503
EARPHONE JACK
IC4511 (AUDIO AMP)
TP4504
ATT
IC4271 (OP AMP)
FL4271
FL4272
FM TRANSMITTER C.B.A.
P4801
(L+R)
FM TRANSMITTER SIGNAL PROCESS
(L-R)
P4206
ANTENNA
P4591
SPEAKER R-CH
(FROM IC3301(1))
TV VOLUME CONTROL
Q4154
(FROM IC6001(8))
AUDIO AMP MUTE(H)
(WITH Hi-Fi AUDIO)
(WITH PICTURE IN PICTURE)
(FROM IC6501 (9))
OUTPUT SELECT B
(FROM IC6501 (8))
OUTPUT SELECT A
(FROM IC3301 (12))
V CHIP MUTE (H)
J4301
(WITHOUT PICTURE IN PICTURE)
NOT USED